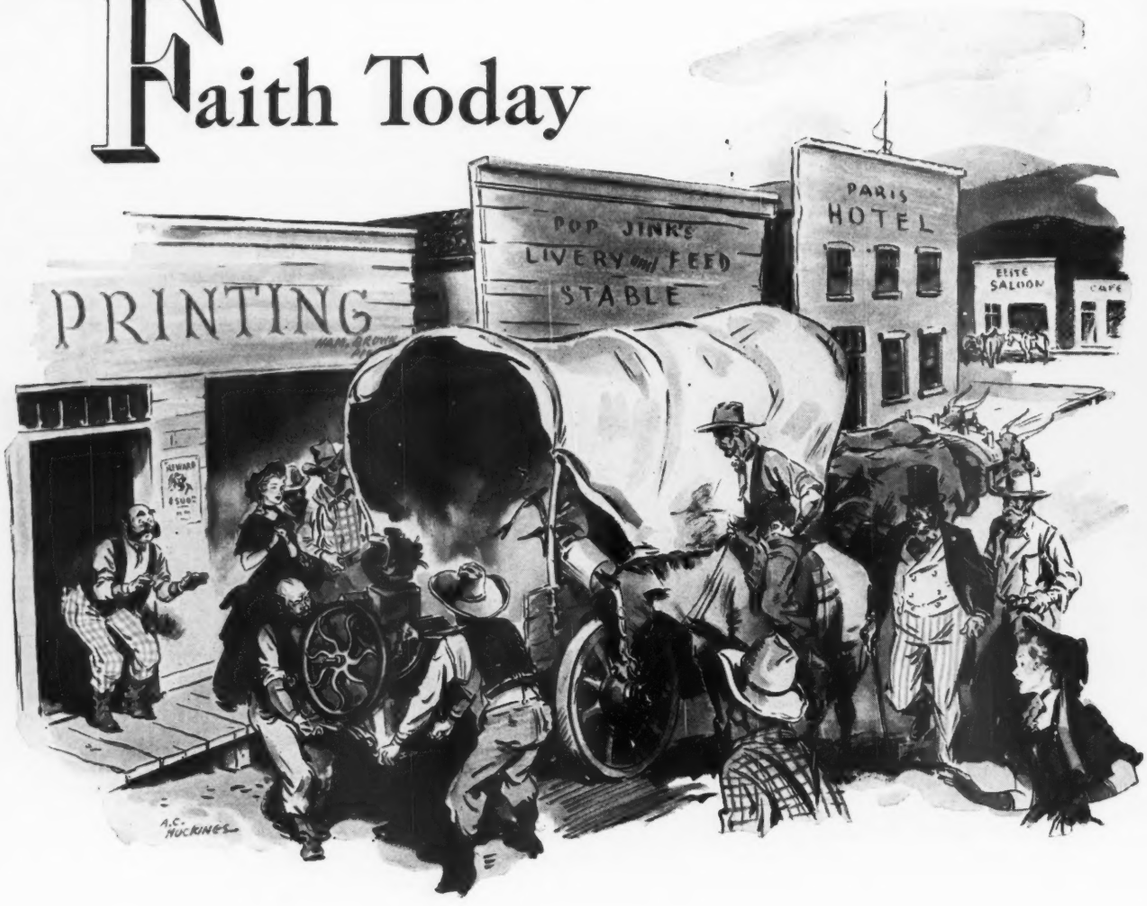
PRINTING EQUIPMENT *Engineer*

A Technical Publication for the Mechanical Executive Responsible for Printing Production, Equipment and Supplies in the Commercial, Magazine, Private Plant and Daily Newspaper Field.

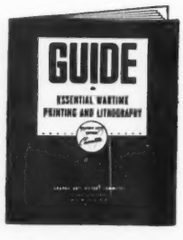
JULY 1943

Faith Today



Who brought the first printing plant into Fort Dodge—or into any other booming frontier town—who gambled his last dollar upon his faith in *printing* as a vitalizing force? It was a *printer*, an idealist, a man of vision. He believed that education would make America the ideal for the world, would protect liberty and stimulate prosperity. He staked his all upon his dream. His shop in the woods or on the prairies became a clearing house of ideas, the mainspring of growth.

The printer's faith in himself, his profession, and his country, triumphed over gruelling hardships in pioneer days. Today, America's Graphic Arts, competent, well-drilled, and endowed with the old printing spirit of fighting faith, is qualified to master even the tougher tasks arising from war needs, and later to cope with the constructive needs of a Nation at peace.

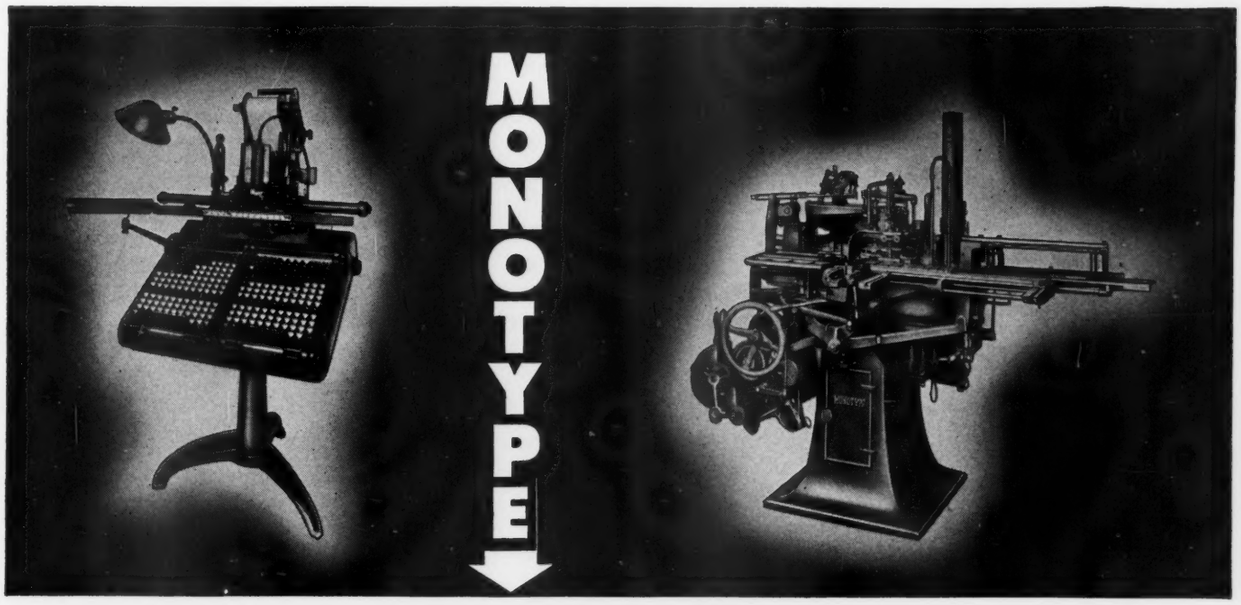


NOW AVAILABLE. Complete and comprehensive Guide Book of Essential Wartime Printing and Lithography. 64 pages (8½" x 11") of detailed description and information on every government public relations problem which can be aided by printed promotion. We shall be glad to obtain a copy for you...or write direct to Graphic Arts Victory Committee, 17 East 42nd Street, New York City.

HARRIS · SEYBOLD · POTTER · COMPANY

HARRIS DIVISION
CLEVELAND 5, OHIO
MANUFACTURERS OF OFFSET LITHOGRAPHIC • LETTERPRESS AND GRAVURE PRINTING MACHINERY • • • • •

SEYBOLD DIVISION
DAYTON F7, OHIO
MANUFACTURERS OF PAPER CUTTERS AND TRIMMERS • KNIFE GRINDERS • DIE PRESSES • WRIGHT DRILLS • MORRISON STITCHERS



the "3 in 1" machine

Only in the MONOTYPE are combined the functions of machine type-setting, type-casting and strip-material making. No other type-setting machine has this feature—none other has such a wide scope of service and usefulness to printers and trade and advertising typographers—and their clients.

TYPE-SETTING—The MONOTYPE sets type in justified lines in measures up to 60 picas wide, in sizes ranging from 4 to 18 point. Straight-matter, tabular and intricate work, ruled forms, rule-and-figure work—in fact, all kinds of composition—are produced with unequalled facility and speed. No other machine embodies within the scope of its operation so wide a range of type-setting, such versatility in the scope and character of its product, nor contributes so much to a general betterment of quality in printing.

TYPE-CASTING—The same machine can be equipped to cast new and perfect type, spaces, special characters and decorative material in sizes from 4 to 36 point. More than 400 type faces in various sizes and 7,500 ornaments and borders are available.

STRIP-CASTING—The same machine when equipped with the proper molds and a cutter attachment, will cast Rules, Leads and Slugs in sizes from 1½ to 12 point, automatically delivered and stacked, cut to labor-saving measures from 6 picas to 25 inches.

Write for Further Information

LANSTON MONOTYPE MACHINE COMPANY

MONOTYPE BLDG., TWENTY-FOURTH AND LOCUST STS., PHILADELPHIA 3, PENNA.

FOR VICTORY . . . BUY UNITED STATES WAR BONDS AND STAMPS

Composed in Monotype 20th Century Family and Monotype Janson, No. 401

IF YOU ADOPT NARROWER NEWSPRINT

~be sure to make this adjustment on ALL types of Autoplates:

If you change to narrower rolls of newsprint as a conservation measure . . . the corresponding shortening of plates will require this slight—*but important*—alteration to your Autoplate equipment:

Fig. 1 shows the *correct* relation between Bolster Strips and Matrix Clips. Note that the *cutout* for the bolster depression in the Clip—*lines up* with the *end* of the Mat Bolster.

Fig. 2 illustrates what happens when the dimension over the Mat Bolster is shortened: The open space (marked A) is left in the cutout in the Matrix Clip. This condition will cause metal fins and pinching of the mat.

Fill in the space "A", and file off the Bolster Strip, so that the Matrix Bolster is in correct relation with the Bolster Strips and Matrix Clips. (This alteration applies to *Matrix Clips* of *Automatic* and *Junior* Autoplates and *Core Casting Bars* of *Pony* Autoplates.)

Wood Newspaper Machinery Corporation, Plainfield, N. J. • New York Office: 501 Fifth Avenue

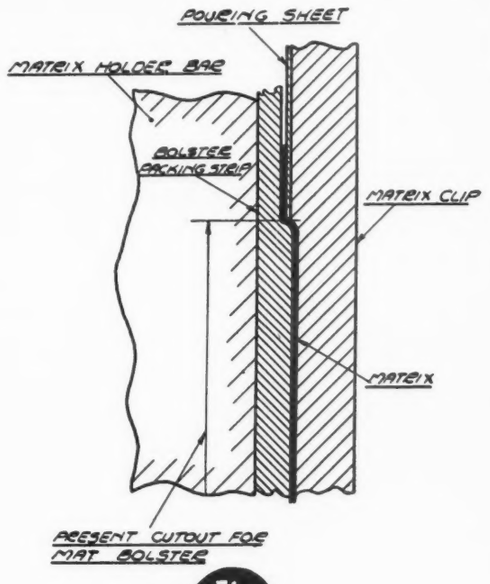


Fig. 1

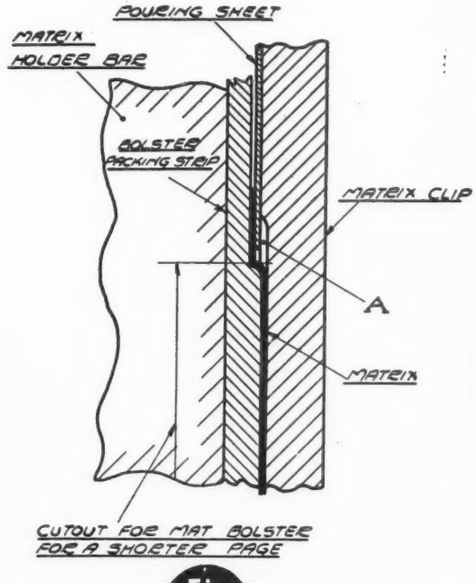
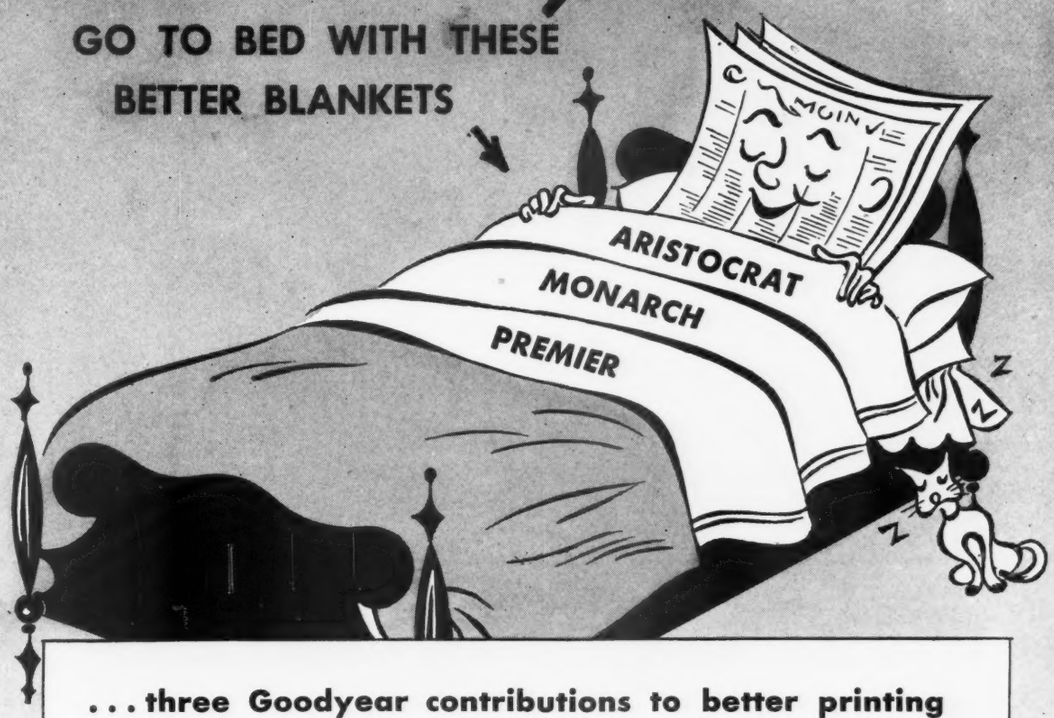


Fig. 2

The Best Papers

GO TO BED WITH THESE BETTER BLANKETS



. . . three Goodyear contributions to better printing

Pressroom experts tell us we've done them a mighty good turn with these three blankets made of a new Goodyear-developed, oil-resisting compound that excels even natural rubber in printing efficiency.

Their names are Goodyear Aristocrat Top Blanket, Goodyear Monarch Top Sheet and Goodyear Premier Underblanket. And you can use them in various two- and three-piece combinations to give you exactly the right packing your press requires.

You'll find these blankets have much greater oil- and ink-resistance than rubber – so last longer. They hold their gauge, don't pack down or swell up – nor do they walk from centers. And, what's most important, they have the resiliency needed for sharp, clean printing on modern presses.

Try a set on your press. You'll see how these blankets live up to the high performance standards for which Goodyear pressroom products have long been famous in your business.

Distributed by

J. THOMAS McHUGH COMPANY
31 East Georgia Street, Indianapolis, Ind.
500 Fifth Avenue, New York, N. Y.

Aristocrat, Monarch, Premier—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER

TRIGGER fingers decide life or death — advance or retreat!

Executive decisions may release or withhold the materials of victory or defeat. The scrap metal vitally and urgently needed for armament is one such instance, for today, America's steel mills watch dwindling scrap piles anxiously. August is regarded as the deadline. Victory may now depend on so lowly a thing as the height of the national scrap pile.

America's printing executives "hold a trigger finger" on many, many thousands of tons of vitally needed scrap materials. The Miller Wartime Scrap Allowance Plan is suggested as an even further reason for the immediate release of all equipment suitable for scrap.

Information gladly given, on request

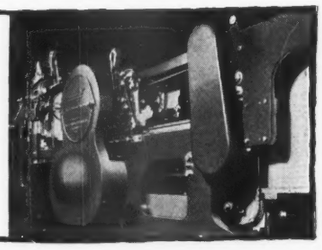
MILLER PRINTING MACHINERY CO., PITTSBURGH, PA.

Miller Automatics provide tomorrow's advantages, TODAY!

COMPACT — Feeder, press and delivery one integral unit on one foundation; up to 50% savings in floor space.

SIMPLE — All main parts quickly accessible; automatic oiling; many automatic controls, stops and safety devices.

DURABLE — 33 steel alloys; all-steel bed motion; rigid, strong alloy bed and feedboard; 144 modern materials, precision fitted.



TECHNICAL BOOKS

- **STANDARD BOOK ON ESTIMATING for PRINTERS —By Fred W. Hoch.** Revised 1941 edition. This book is a primer for students and a reference for printers and estimators. Every printing plant should have a copy. Author explains all operations in commercial printing plant and shows production time allowance for each in hours and decimal hours. Size, 6 in. by 9¼ in., 268 pages, $3.75 per copy, cash with order.
- **PRINTING INKS — Their Chemistry and Technology —By Carleton Ellis.** Bound in cloth, 6 in. by 9½ in., 560 pages, well illustrated. For printing executives, pressmen, photo-engravers, platemakers, ink manufacturers, chemists, paper-makers. Author stays close to printing plant. The solving of new production problems brought about by technological improvements, both in equipment and inks, created the urgent need for this book. Price $7, cash with order.
- **THE PRACTICE OF PRESSWORK—By Craig R. Spicher.** We offer copies to our readers, at the special price of $4.00 per copy, cash with order. No printer should be without a copy (9000 copies printed).
- **LITHOGRAPHER'S MANUAL—Compiled by Walter E. Soderstrom.** Second revised edition. Technical information from copy to finished job. Nationally known technical men contributed the bulk of practical camera, platemaking and presswork information. Size 8½ in. by 11¼ in. Bound in red cloth, gold stamped. Many of the 368 pages are illustrated. Price $5 per copy, cash with order.
- **PHOTOGRAVURE—By H. Mills Cartwright.** Covers all of photogravure's basic principles in concise and readable language. Rotogravure receives minor discussion but this is generally considered best textbook on photogravure process. Contains 202 pages, 34 illustrations, maroon cloth, size 6¼ in. by 9¼ in., $3.50 per copy. cash with order.
- **MANUAL OF STEREOTYPING — By Joseph Goggin.** This 256-page book conveys technical information and manipulating procedure. Written by a practical stereotyper. Price $5.00, cash with order.
- **PRESSROOM PROBLEMS AND ANSWERS — By Fred W. Hoch.** Might be considered a miniature encyclopedia since it contains answers to 334 pressroom problems which have been answered by Mr. Hoch. Written in language of journeyman pressman. Pressmen, production men, paper and ink manufacturers, electrotypers and photo-engravers will find this book of high utility when pressroom problems arise in which tendency is to lay blame on furnished materials used in pressroom production. Size, 6 in. by 9¼ in., 258 pages, gold stamped blue cloth. Price, $3 per copy, cash with order.
- **HOW TO ADJUST WORK-UPS — By Wm. H. Lichter and Geo. F. Smalley.** Booklet consists of 24 pages in which are analysed and remedies are given for prevention and/or elimination of work-ups. Material written as result of actual plant experience. Size, 5¼ in. by 7¼ in. Price, $1 per copy, cash with order.
- **HANDBOOK FOR PRESSMEN — By Fred W. Hoch.** Book written by authority on all phases of flat-bed letterpress production for the practical pressman. Contains 248 pages, 26 illustrations and 24 charts, $3 per copy, cash with order.

• *Send All Orders With Remittance to*

PRINTING EQUIPMENT Engineer

1276 W. Third Street
Cleveland, Ohio

Printing Equipment *Engineer*

LEADING ARTICLES, JULY 1943

Electronics

What It Is and What It Means To Printing Industry, discussed by Engineer W. D. Cockrell..... 7

Foreman Joe Bloe

Through Mom's diplomacy, takes a day off to find himself with respect to plant problems. Read Part III by W. W. Warfel.....12

423 Replies Received

To questionnaires in ANPA Mechanical Conference By Mail.....15

War Efforts Convention

To be held in Memphis, Tenn. Craftsmen's program devoted to serious industry problems..16

Equipment and Supplies

Improved Haberule Visual Copy Caster and Lounsbury Binding Method for Publications.....18

Absenteeism

And the part to be played by industry in its elimination discussed in booklet published by Graphic Arts Victory Committee.....20

WPB News and Notes....20

Printing Patents.....21

Warns Newspaper Publishing Industry

That consumption must be balanced with production or another curtailment order....26

Employment and Service.28

PRINTING EQUIPMENT Engineer, a monthly publication, Volume 66, No. 4. Published at 1276 West Third St., Cleveland, Ohio, July, 1943. ☆ MacD. Sinclair, Editor. Adam Henri Reiser, Associate Editor. John E. Cobb and J. Homer Winkler, Contributing Editors. ☆ Don Will, Publisher. Western Representative E. P. Bloomster, 232 East Erie St., Chicago, Ill., phone SUperior 2444. Copyright 1943 by The Willsea Pub. Co. ☆ Subscription price per year, $3.50 in advance in U. S. A. Single copy current issues, 35c. Feature issues, $1.00. December Equipment and Supplies Catalog Issue, $1.00. Subscriptions in foreign countries, $4.50 in advance, U. S. currency.☆ Printed in U. S. A.

MEMBER CONTROLLED CCA CIRCULATION AUDIT

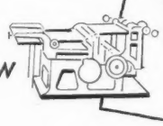
hairline

REGISTER

You can't buy it by the pound. You can't add it to a press by attaching a gadget. Hairline register begins with tumbler gripper motion, a press bed that's perfectly synchronized with the cylinder, and the positive action of a simple side guide. In the ATF Kelly press all the elements that produce hairline register are precision made and as delicately co-ordinated as the parts of a fine watch.

We are inviting inquiries now for delivery of ATF Kelly presses after the war is won. Write or tell us the sizes of presses in which you will be interested.

ATF Kelly... THE PRESS OF TODAY AND TOMORROW



BUILT AND BACKED BY
american
TYPE FOUNDERS
200 ELMORA AVENUE
ELIZABETH, NEW JERSEY

ELECTRONICS—*What It Is and What It Means to Printing Industry*

By W. D. COCKRELL*

*Engineer, Electronics Section, Industrial Control Division, General Electric Company, Schenectady, N. Y.

Fig. 1.—G-E photoelectric recording spectrophotometer being used at Interchemical Corporation for color specification of inks, paints, and the like.

Fig. 2.—This reflection meter is used for determining the whiteness of paper.

—Photo Courtesy Stanley Works

Fig. 3.—A lighting element (phototube or electric eye) is mounted in the wall one at either side of the passage-way so that when the truck is passed between the phototube lenses the door-opening mechanism is automatically set in motion. The doors remain open for a predetermined period to permit passage of the truck and its operator, before they are closed automatically.

"*ELECTRONICS*" is a word that is heard on every side these days, so perhaps now is a good time for us to pin it down and see what it means to the printing industry. Electronics is simply the science of controlling electricity freed from the restraint of wires. Hence, electronics, particularly photoelectronics, including the innumerable uses of the phototube or "electric eye", have a very definite place in industry. Since the result of any printing is its effect on the human eye, it is logical that the electric eye should do its part in assisting human eyes in the process.

The testing of the quality of the ink—the color, the density, viscosity, drying ability—can be assisted by electronic devices. Tests and control of the paper itself, its color, surface, strength, and opaqueness, again call for electronics assistance. (Figs. 1 and 2).

The various processes, such as electrodeposition, etching, photography, lithography, etc., heating, drying, and air conditioning also enlist opportunities for electronic control.

The transmission of news and pictures by long distance telephone and radio, both of which would be impossible without electronic tubes, is already too common to require additional discussion.

The everyday tasks of opening doors, acting as limit switches or counting, are not particularly new or exciting, but each can do its share toward contributing to a smooth running, economically operated plant. (Fig. 3).

In brief, for visual results, wherever light is reflected from ink and paper, there lie possibilities for photoelectronic control. Wherever precise measurements or control are desired, where the controlling signal may be converted to an electric impulse, no matter how weak, there electronic control may be used.

So much for the possibilities for electronic devices. Let us turn to those tools which we have available to accomplish these results. The man not familiar with the electronic equipment is inclined to accept electronic devices blindly and to be somewhat in awe of them. Such an attitude is completely unnecessary. It is not necessary to know all the details of your electronic equipment in order to appreciate how it operates, just as in our automobile we do not know the number of teeth in the gears, but we do know that it requires gasoline and an electric spark to furnish the power for operation. Some of us are all too familiar with the effect of lack of gasoline, the dead battery, or a frozen radiator. In the same manner, an electronic device can be used best when the principles of operation are known and the difficulty due to some forms of abuse can be anticipated.

The most common electron tube is nothing more than a comparatively simple one-way electric valve. (In fact, our English friends call them "valves" instead of tubes.) Sometimes this one-way action or rectification is very useful to convert alternating current, the kind of power supplied to you by your power company, to direct current, useful for electroplating and the operation of variable-speed motors, charging batteries, etc. To do this, an electron tube is built as follows: In a container, from which all the air has been pumped, are placed two elements insulated from each other. (Figs. 4 and 4a). One, called the cathode, is coated with a special material and is heated electrically to permit a stream of electrons, those infinitely tiny particles which are the ultimate subdivision of both electric current and all physical matter, to be "boiled" off. If the other element, called the anode, has a potential or electrical pressure with respect to the cathode potential, which we call "positive", it will attract the electrons boiling at the surface of the cathode and draw a stream of them across the space between, to cause an electrical current flow. This current completes its circuit through the load and power supply back to the cathode. But if the conditions are reversed, that is, the cathode potential becomes positive with respect to the anode, it can draw no electrons from the cold anode and no reverse current can flow.

In this manner, if the source of power is 60-cycle alternating voltage, (reversing its direction 60 times every second), current is per-

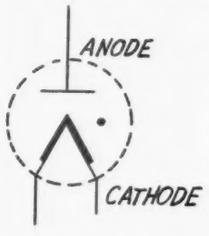


Fig. 4.—(At left) Mercury-vapor or phanotron rectifier tube.

Fig. 4a.—(Above right) Diode rectifier expressed by this elementary symbol (directly heated cathode).

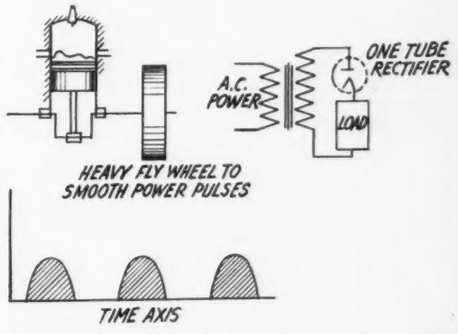


Fig. 5.—Single-cylinder engine and one-tube rectifier, showing power pulses intermittent unless smoothed by heavy flywheel or electrical filter.

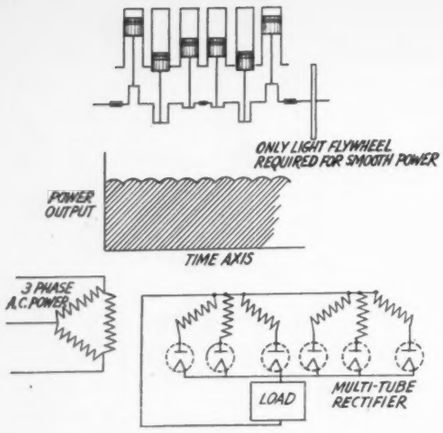


Fig. 6.—Diagrammatical illustration of multi-cylinder engine and multi-tube rectifier, showing the more uniform and continuous output obtained.

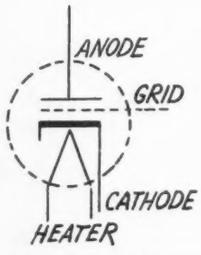


Fig. 7.—(At left) A triode amplifier tube.

Fig. 7a. — (Above) Triode amplifier tube expressed by this elementary symbol (indirectly heated cathode).

Fig. 9.—(Above) A small photoelectric relay for operating magnetic counters, soleroids, etc. Phototube mounted behind center opening.

Fig. 8.—(At left) Typical phototube—function is dependent upon the action of light striking its special sensitized surface to release the electrons. Should not be confused with photocell. Is capable of following light impulses of many thousand times per second.

mitted to flow through the load in but one direction. This is similar to the action of a steam or gasoline engine where, by proper valve and spark action, the expanding vapor or gas pushes on the piston only on the down stroke. However, the one-tube rectifier, just as the one-cylinder engine, cannot produce a smooth output, unless greatly smoothed by the flywheel effect of a large electrical filter. (Fig. 5). So most electronic rectifiers use two, three, four, six, or more tubes (Fig. 6) to give a smoother output, just as your car uses four, six, eight, or more cylinders for the same purpose. Thus, we see that one fundamental function of the electron tube is its rectifying action.

But many electron tubes have another and even more important feature. In the passage of the current through the tube, it is reduced to its most elemental form, that of a stream of electrons or pure electrical charges. Here, then, is the ideal place to control this current. The mass of the electron is so small that the number required to light a hundred watt lamp, 1 amp for one second, weigh less than a billionth of an ounce. A mass so extremely small can be regulated or shut off by the application of control power infinitely less than that required to operate the smallest mechanical switch or control knob. It also indicates why the control action can be so fast and accurate. Starting and stopping the current flow hundreds, or even millions of times a second, are simple under these conditions.

The element used for control is placed between the anode and cathode and is called the "grid". In some tubes it is in the form of a coil of fine wire and in others in the form of a closed metal cylinder or cup with a master control aperture. By placing a negative voltage on the grid as opposed to the positive voltage on the anode, the flow of electrons through the grid to the anode can be decreased or even prevented altogether. The negative grid voltage, of course, deflects the electron stream away from the grid so that normally no current flows from the cathode to the grid. (Fig. 7, 7a).

Thus, by the application of a very small amount of power to change the grid voltage, a much larger amount of power can be controlled rapidly and accurately, by regulation of the electron current stream between cathode and anode. It is this multiplication of power from the small input control energy to the larger cathode-anode current change that makes the electronic tube most useful.

The electron tubes most widely used today, may be divided, roughly, into three classes—phototubes, high-vacuum tubes, and gas-filled tubes.

The phototube is a unique electronic device in that the cathode is not heated electrically but depends on the action of light striking its special sensitized surface to release the electrons. These electrons are drawn to the positive anode, just as in any other electron tube. If the tube is highly evacuated, the proportion between the intensity of light, and the number of electrons released is quite accurate. However, if a slight amount of special gas is introduced, a larger electron stream can be produced but the accuracy of the ratio between light intensity and current is reduced. Fig. 8 shows a typical phototube and Fig. 9 shows a complete photoelectric relay.

The phototube is an electric valve capable of following light impulses of many thousand times per second, and should not be confused with the photocell, a low-voltage, fairly slow acting device, in which the light energy is changed to electric power sufficient to operate very sensitive meters. Photocells are very useful in light meters (Fig. 10) and photographic exposure meters, but are not so well adapted for use with electronic amplifiers.

Phototubes may be made more sensitive to red and infra-red light, or conversely to blue and green light, depending on the type of coating material used on the cathode.

High-vacuum tubes may be two-element tubes called kenotrons, and used as rectifiers only, or they may contain one or more control grids and are then called amplifiers or pliotron tubes. In industrial use, this type of tube is usually limited to small sizes, controlling current of a small fraction of an ampere and its principal function is to step-up the extremely small signal from phototubes or other input to a value sufficient to operate small magnetic switches or counters, or to control the larger gas-filled power tubes described below.

In radio broadcast or television use, because of the high frequencies involved, high-vacuum tubes must be used throughout. (High-frequency heating tubes are basically the same as those used in broadcast stations). In some of the larger broadcast stations, amplifier tubes large enough to control the entire power applying to a printing plant are used. However, tubes of this size are quite expensive and cannot compare in either cost or efficiency with the gas-filled tube for most industrial purposes. (Fig. 11 and 12).

Gas-filled tubes also may be rectifiers only, called phanotrons, or may have control grids, such as thyratrons, or igniter control, such as ignitrons. The introduction of a small amount of mercury vapor or some inert gas, such as argon or xenon, into the tube does three things. First, it permits much more current to flow through the tubes for a given loss. A gas-filled tube will have a continuous current rating of ten to twenty times that of a high-vacuum tube of the same physical size. (Fig. 13, 13a). Second, to attain this efficiency, we lost both the ability to operate at extremely high frequencies and at high voltages, such as are found in the high-vacuum amplifier. However, these

Fig. 10.—Photocells are useful in light meters and photographic exposure meters but are not so well adapted for use with electronic amplifiers. Photocell is fairly slow acting device.

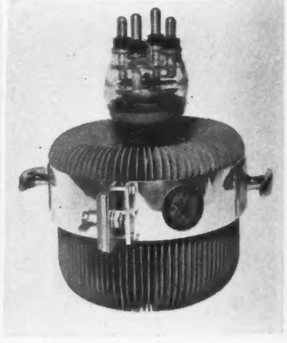


Fig. 11.—(At left) A large water-cooled triode for radio use.

Fig. 12.—(Above) A large radio transmitting tube with radiating fins for forced air cooling.

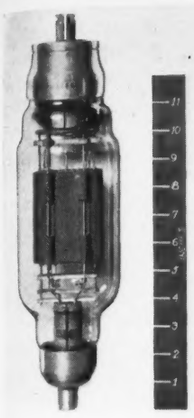


Fig. 13.— Vacuum type tube. Its relative size is shown by placing alongside an inch scale.

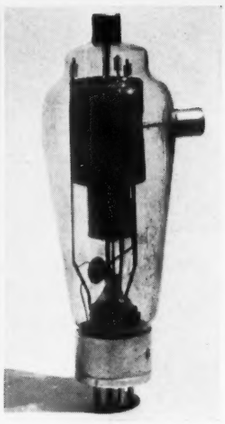


Fig. 13a.—This gas-filled tube is same physical size as in Fig. 13, but permits greater current action.

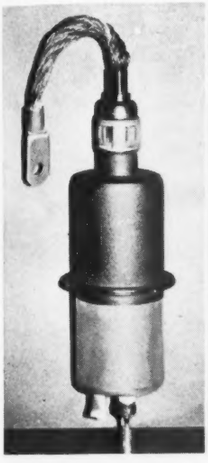


Fig. 14.—Small air-cooled ignitron tube. 5 in. wide, by 2 in.

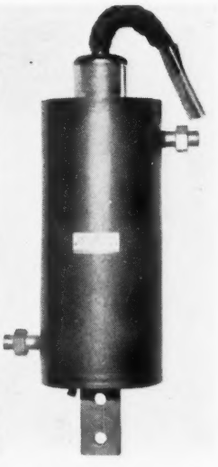


Fig. 15.— In this figure is shown a water-cooled ignitron tube, through the jacket of which water is circulated.

Fig. 16.—One of the simplest electronic applications is the photoelectric relay—may be used as a web-break detector, a safety device on a job press, or to count sheets on a conveyor.

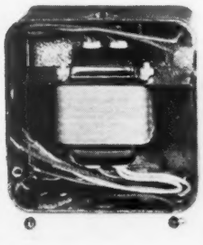


Fig. 17a.—Stepdown transformer for light source shown in Fig. 17 is shown here. Case is approx. 5 in. high., by 5 in. wide, by 2 in.

Fig. 17.—(Above, left) In connection with photoelectric relays, a light source is required. This usually takes the form of a small lamp (such as an automobile head-lamp) with concentrated filament and supplied by a small step-down transformer. Light rays from lamp pass through accompanying lens which directs them onto phototube.

limits for the gas-filled tube are still much more than usually required for industrial purposes. Finally, although the grid will prevent current from flowing if it is negative when the anode becomes positive, once the grid has permitted current to flow, it is powerless to stop the flow until the anode again becomes negative. This means that the gas-filled tube is most useful on alternating-current voltages, and when so used is limited to timing accuracies of 1/60 sec. on the typical a.c. power supply.

Thyratrons require very little control power since the grid has but to regulate the electrons already available at the surface of the heated cathode. The maximum current that can flow without injury to the tube is, however, limited by the amount of power used to heat the cathode.

The ignitron, on the other hand, while similar in most respects to the thyratron, uses no heating to make available the electrons in its cathode, which consists of a pool of mercury. In order to start the flow of electron current, an igniter is used which requires much more power than the thyratron grid. But once the flow has started, the required energy for the liberation of the electron comes from the current stream itself. Thus the action is cumulative. The more current that flows, the more electrons are made available so that a very large current may flow for a short time without injury to the tubes. But the current which may flow continually is limited by the ability of the tube to dissipate the losses as heat. To assist in cooling the ignitron, there is often added a jacket through which water is circulated. (Fig. 14, 15).

Summary

To sum up, the more common electron tubes are rectifiers which permit the electron current to flow in one direction and block it in the other. In addition, they may contain a control element to regulate or hold off the current while it is in the form of an electron stream, since in this state the control can be obtained with much less power and much more rapidly than at any other time.

Electron tubes divide naturally into three types, with a few subdivisions:

Phototubes permit an electron current to flow in proportion to the amount of light striking their sensitive surfaces. Because for most purposes the available light is small, the electron flow also is extremely small and must be amplified to do useful work.

The *high-vacuum tubes* may be simple rectifiers or kenotrons, or may have control grids as amplifiers or pliotrons. They may be controlled by the small output of the phototube or similar device and, in turn, may operate small magnetic switches or control thyratrons.

Gas-filled tubes may again be simple rectifiers, or phanotrons, or may be controlled as thyratrons or ignitrons.

Thyratrons require small control power which is often obtained from pliotrons. They can operate motors of 5 to 10 horsepower, or operate any of the large magnetic switches or solenoids.

Finally, ignitrons require a reasonably large amount of control power such as might be supplied by a thyratron, but, in turn, have sufficient capacity to operate the motors driving the largest presses or supply d.c. power for a whole printing plant.

Typical Applications of Electron Tubes in Printing Plants

Now that we have seen how the electron tube itself operates, let us look at a few typical uses to which it might be put in a printing plant, bearing in mind that the tube itself is only a valve or switch to control the flow of electric power. It can neither generate the power nor apply it. The ultimate action can only take place through the usual means. Rotary motion is still produced by electric motors. Light still comes from lamp bulbs, a short pull or blow is produced by electric magnets or solenoids; heat comes from resistance elements or by transformer action, causing heat within the resistance of the material itself; and electrochemical processes still take place in the same tanks and by the same methods as heretofore.

Photoelectric Relays

One of the simplest applications is that of the photoelectric relay which may be used as a web-break detector, or as a safety device on a job press or machine tool, or to count sheets on a conveyor. (Fig. 16).

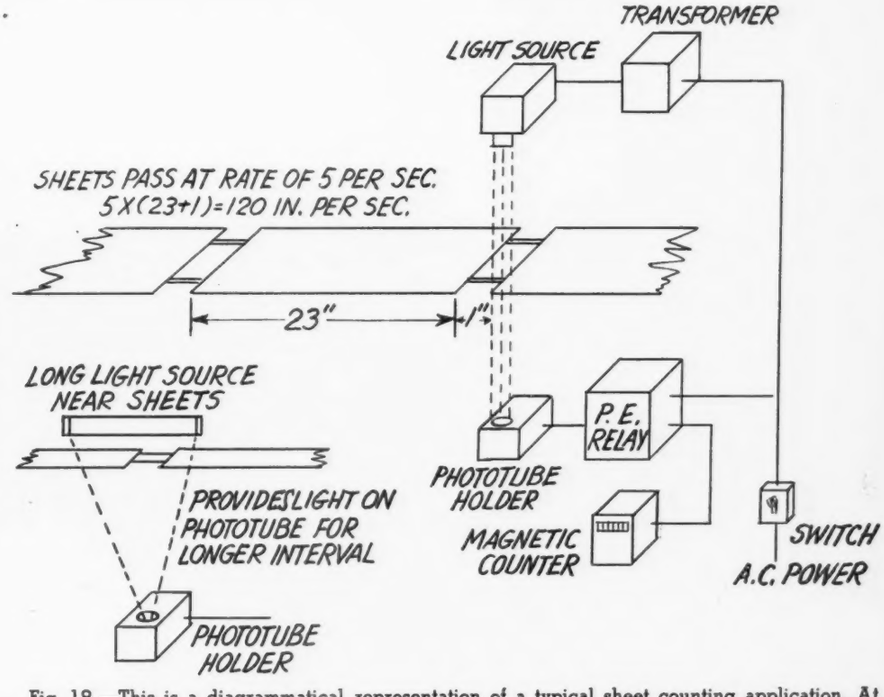


Fig. 18.—This is a diagrammatical representation of a typical sheet counting application. At lower left is shown how the use of a long light source near the sheet provides a longer interval of light on the phototube in order to utilize a less expensive photoelectric relay.

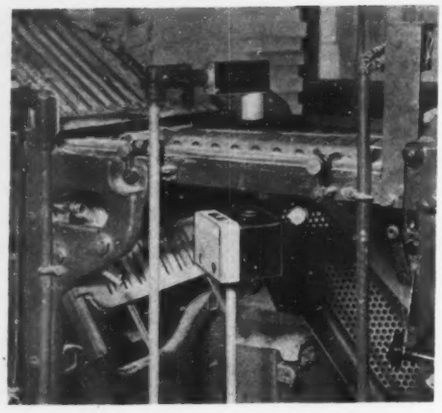


Fig. 18a.—Here a photoelectric relay has been applied to the task of counting sheets in an automatic folding machine in a printing plant. The light source may be seen above the conveyor roller frame and the lens mounted above phototube in case is positioned below the roller frame.

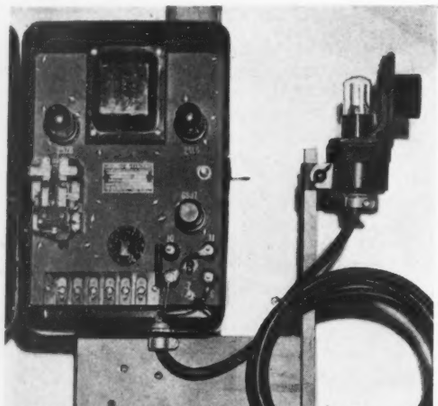


Fig. 19.—Photoelectric relay assembly showing phototube, lens hood and control panel. This relay operates from a.c. power and an electronic rectifier is incorporated within its circuit to obtain d.c. as well as a pulse-stretching circuit, which will extend pulses of 0.001 sec. or more up to ½ sec.

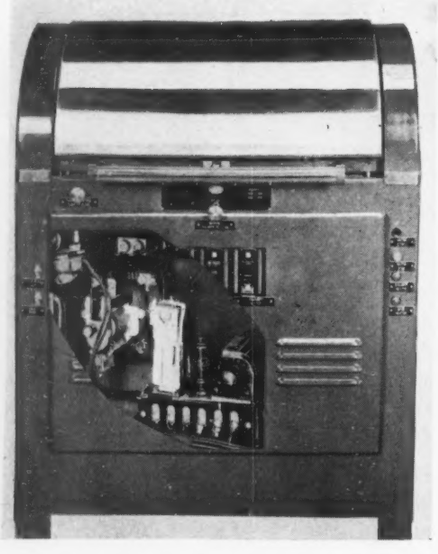


Fig. 20.—This illustration of a Sta-Hi vacuum stereotype dry mat former has the enclosing case partly stripped away to show the electronic time delay which determines both the preshrink and mat drying intervals when the lid is closed down upon a freshly molded stereotype dry mat.

Some form of light source is required. This usually takes the form of a small lamp with concentrated filament, such as used in automobile head-lamps, and supplied by a small stepdown transformer from the a.c. supply. (Fig. 17, 17a). Also, a simple optical system is needed to project the light past the operating point and onto the phototube. In this case it might consist of a single lens to gather a large share of the light from the lamp bulb and direct it toward the phototube. This part requires more application of high school physics or amateur photography than electronics.

The change of light on the phototube controls its output which, in turn, is stepped-up by the amplifier tube or pliotron. In some photoelectric devices, the pliotron may operate a small magnetic counter or switch directly; in others, the power controlled may again be stepped-up by a thyratron to operate a larger magnetic device or motor.

The tubes may be supplied from a raw a.c. power; d.c. power when available, or other electronic tubes may be used to rectify the a.c. to d.c. for this purpose. The advantage of d.c. over a.c. for the operation of photoelectric relays is in the possible speed of operation. If a.c. is used directly, the tube must both rectify and control. If a single tube is used, it will then be inoperative during the negative half-cycle of the a.c. supply, as explained under the description of Rectifier Tubes, so that if the light pulse required for counting occurs at this time, no action will take place.

Again, because it is necessary to incorporate the "flywheel" action to prevent chattering of the counter or other magnetic device, the minimum operating pulse or count must last two or three of the alternating-current cycles which, in the usual 60 cy. power, means 1/20 to 1/30 sec. To this time must be added the time required for the electromechanical action to take place, so that the maximum speed for an a.c. relay is usually from 300 to 450 operations per min., or 18,000 to 27,000 per hr. This assumes equal time for the light and the dark intervals. The important consideration is the length of time of the shortest interval, whether it is the light or the dark interval, which is required for the counter to operate properly.

For higher speeds of operation, or for operation over a shorter time interval, it is necessary to use direct current or to rectify the a.c. to direct current with a separate rectifier before applying it to the photoelectric amplifier circuit. When this is done, the only limitation lies in the speed at which the counter itself can operate. Some of the better magnetic counters can operate as high as 600 per min., or 36,000 per hr.

As an illustration, let us take a typical example. Say sheets 23 in. long with a 1 in. spacing between them are passing along a conveyor at the rate of 300 per min. (Fig. 18 and 18a.) From the rate of operation, it would seem that a simple a.c. form of photoelectric counter would be satisfactory. But it must be remembered that the speeds are determined by the minimum interval, whether it be light or dark. In this case, the interval at which light may project through the space to the phototube would be figured as follows:

The conveyor moves at the rate of 5 sheets per second, times 24 in. (23 in. + 1 in.) equals 120 in. per sec. This means that the space between sheets passes in 1/120 sec. If an a.c. relay were used, this 1/120 sec. might be during the negative half-cycle and thus a true count could not be obtained. However, the difficulty might be overcome in one of two ways.

Since the space cannot be widened, the light source itself may be, by using a number of lamps in a row, or using a fluorescent lamp, say 12 in. long. (See Fig. 18.) This will permit light to shine on the phototube during the passage of the space past this whole row of lamps, and the time for operation will be correspondingly longer.

If this cannot be done, a d.c. form of photoelectric relay may be used. As explained above, this type can operate easily on the 1/120 sec. pulse. However, it is doubtful that the magnetic counter itself could operate on such a short pulse of current. To correct this difficulty, one type of photoelectric relay (Fig. 19) operates from a.c. power and incorporates within its circuit an electronic rectifier to obtain d.c. as well as a pulse-stretching circuit, which will extend pulses of .001 sec. or more up to ½ sec., if necessary. This provides sufficient time to operate any of the smaller magnetic devices.

Electronic Timers

Another simple electronic device of rapidly expanding application is the electronic timer for the precise timing of short cycles, such as might be found in photo-engraving processes, or heating, cooling, or drying cycles. (Fig. 21.) The actual timing is measured by the electric charge drawn from a capacitor through a resistor—both standard electric devices. The addition of the electron tube here makes this

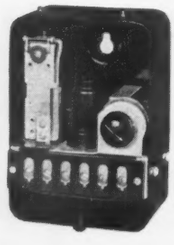


Fig. 21.—A simple electronic device of rapidly expanding application is the electronic timer for the precise timing of short cycles, such as are utilized in photo-engraving processes, or in heating, cooling, or drying cycles.

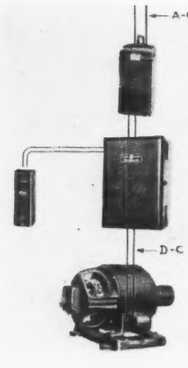


Fig. 22.—Here are shown the component parts of Thy-mo-trol, a versatile drive. Thyratrons take power from a.c. line and rectify it to d.c. to operate a d-c. motor of standard construction. A pliotron amplifier checks the motor speed and tells the thyratrons how much d.c. is required to hold the motor speed constant.

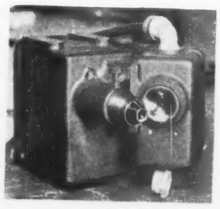


Fig. 23.—This figure shows a scanning head for photoelectric color-register control on gravure printing press in plant of Philadelphia *Inquirer*. In this equipment, the phototube, pliotron and thyratron are all combined. The phototube must pick up a signal from a faint yellow register mark on the paper web passing at 1000 ft. per min. The electric signal must be stepped up by two amplifier pliotrons in the scanning head before being sent a few feet via cable to a "mixing" panel for comparison with the signal received from a subsequent printing cylinder.

In the color register scanning head shown here are combined a light source consisting of a lamp bulb and a combination of lenses to concentrate a brilliant spot of light on the paper, a pick-up lens to gather the light and focus the image of the spot on a slit in front of the phototube, and the required amplifier tubes and circuits located closely to the phototube.

In the mixing panel, the resulting signal is further amplified and stretched out to actuate thyratrons controling the correcting motor which moves the compensating roll or differential.

form of timing practical because the small power required for the operation of electron tubes permits the use of reasonable size resistors and capacitors. (Fig. 20.) Resetting an electronic timer involves only the closing of a small switch to recharge the capacitor, or recharging by electronic means, rather than the reclutching of gears with the attendant noise and wear.

This again emphasizes the fact that the electron tube is not a strange and magic device, but simply a very flexible tool which permits us to get new and better results from other better-known electrical apparatus.

Or let us take another typical electron tube control. Say we have a special type-casting machine which we wish to run over a wide range of speeds, say 8 or 10 to 1. Here is an excellent chance to combine the rectifying and the controlling action. Thyratrons take the power from the a.c. line and rectify it to d.c., to operate a d.c. motor of standard construction. A pliotron amplifier checks the motor speed and tells the thyratrons how much d.c. is required to hold the speed constant, in spite of change in load and other factors. Other pliotrons can check the motor current and prevent harm to either motor or thyratrons due to overloading. Fig. 22 shows the component parts of such a versatile drive—the Thy-mo-trol.

Finally, the phototube, pliotron, and thyratron may all be combined in one equipment, such as the photoelectric color register control (described in *Printing Equipment Engineer*—August 1941). Here the phototube must pick up a signal from a faint yellow register mark passing at 1000 ft. per min. The electric signal produced is so extremely small that it must be stepped up by two amplifier pliotrons in a "scanning head" before we dare send it a few feet through a cable to a "mixing" panel for comparison with the signal received from a subsequent printing cylinder. The scanning head (Fig. 23) combines a light source consisting of a lamp bulb and a combination of lenses to concentrate a brilliant spot of light on the paper, a pick-up lens to gather the light and focus the image of the spot on a slit in front of the phototube, and the required amplifier tubes and circuits located as close as practical to the phototube. In the mixing panel, the resulting signal is further amplified and stretched out to actuate thyratrons which control the correcting motor moving the compensating roll or differential. Fig. 24 shows an application of photoelectric color register control to a multicolor gravure press at the Neo Gravure Printing Co., New York, N. Y.

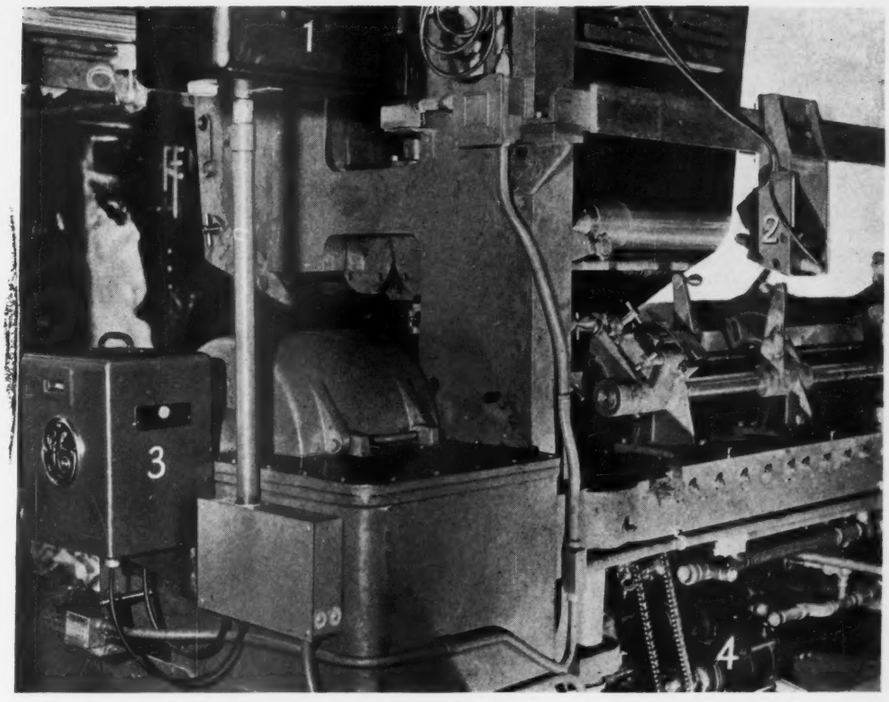
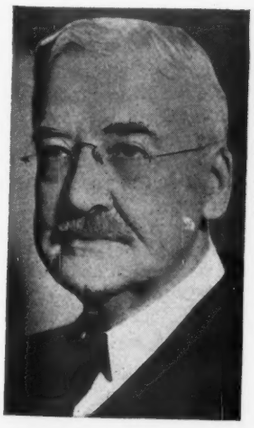


Fig. 24.—Photoelectric color register control showing complete equipment for one color unit on R. Hoe & Co. multicolor gravure press in plant of Neo Gravure Printing Co., New York, N. Y. This is drive-side view of press unit. At 1 is shown the mixing panel; the web scanner, is indicated at 2 (see also Fig. 23); 3 is the disk scanner, and the fractional horsepower gear-motor (with sprocket and chain drive) for cylinder correction is indicated at 4.

It is difficult to foretell just how many jobs in the printing plant the electron tube will be called upon to do in the next few years, any more than one might anticipate the many uses to which hydraulic valves might be put. If the prospective user can think of the electron tube as an electric valve, an extremely fast-acting, one-way valve that requires little power operation, its possibilities and limitations become clear, and its chance for successful application is assured. Many jobs now being done satisfactorily by other means may be changed to electronic means due to lower first cost, greater precision or speed of operation, or because of proved greater reliability and reduced maintenance. The electron tube is a new and versatile tool, and the profits usually go to the man who understands and applies new equipment first.

EXECUTIVE ¶s

Alfred F. Harris, 83, chairman of the board, Harris-Seybold-Potter Company, Cleveland, passed away during the latter part of June. Services were held at the Millard Son & Raper Funeral Home, Cleveland, and burial took place in Warren, Ohio. Surviving are his son, A. Stull Harris, vice president of the company, three grandchildren and two great-grandchildren. He was a member of numerous craft organizations and was a 32nd degree Mason. In 1940 he was presented with a Modern Pioneer Award for his work in developing the offset-lith printing press by the National Association of Manufacturers. Originally, Mr. Harris was a watchmaker in business with his brother, the late Charles G. Harris in Niles, Ohio. A. F. Harris was one of the most prominent and highly respected figures in the printing equipment field, he having developed many improvements in printing presses. Principal among these were the modern offset-lith press and the automatic feed for printing presses. The Harris Press Company was established in Niles, Ohio, in 1895. In 1917, the plant was moved to Cleveland. "It was always a matter of pride with Mr. Harris that he had associated with him a thoroughly competent organization. These men to whom for many years he had delegated power and responsibility for company management and operation will continue to carry forward the policies established by him," said a prominent company executive.

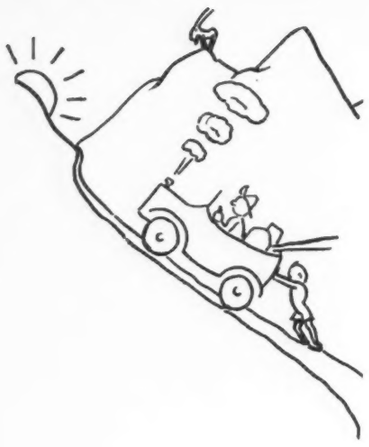


A. F. Harris, Pioneer in development of automatic printing machinery and the offset-lith printing press.

Lieut. Commander William N. Davies has been called to active service by the United States Navy, adding to the list of IPI men in service. Mr. Davies was graduated from the Naval Academy in 1927 and has been associated with International Printing Ink for sixteen years. Uncle Sam and IPI have been his sole employers. In January, 1941, he was made sales manager of the New York branch.

Lieut. Commander William N. Davies, USN.

Norma-Hoffmann Bearings Corporation, Stamford, Conn., announces that Frank L. Wright, formerly chief metallurgist with a connection of over 11 years with the firm, has been advanced to the position of manager of research.



Through Mom's diplomacy, Joe had a day off from the Daub Publishing Company plant. Mom knew what Joe needed—a day for fishing. Accompanied by Junior, Joe tootled the car up the mountain. The crisp early morning air blew the cobwebs from his brain. In Nature's setting of snow-capped peaks, changing colors in the sky, dew on the leaves and colorful wild flowers, his shop problem was like something from another world—like a leader line protruding above the level of the form—it seemed so small and insignificant.

Foreman Joe Bloe of Daub

Publishing Company finds himself in relation to plant organization problems with the aid of Mom's diplomacy—Returns from fishing trip with cobwebs cleared away from mental processes

By WILLIAM WYATT WARFEL

III.

JOE BLOE was in a picklement. This was nothing new. It seemed to be a regular occurence. Just as he was out of one mess, another popped up to plague him. Joe took his troubles home. Night after night he tried to solve them so the answer would hold water. He was trying to keep his promise to give the Old Man charts till they ran out of his ears. The Old Man was going to swim in charts. Facts and more facts. That was the idea. The Old Man would grow a set of whiskers looking at the lake of ink and probably yell, "Lay off, MacDuff."

A week passed. Reams of paper cascaded into the waste basket. Joe's knife dulled from constant pencil sharpening. Each night, like a school boy, he took up his home work as soon as the supper dishes were cleared from the table. Mom looked worried. Junior spoke in whispers. One evening Junior's algebra refused tu jell. It seemed to him that Joe's conduct was outrageous. What right did Pops have to tie himself up in a knot like that, thought Junior. The answer was, of course, no right at all. So thought Junior.

"Pops," squawked the youngster, "I gotta have some help tonight. Mom gave me some answers last night and they were all wrong. The teacher said I was a dumbbell. Then she made a crack about dumb parents doing us kids' homework. You gotta help me."

Mom swung at Junior from across the table. Joe caught her hand just in time. Her wallop had steam behind it. She was mad as a hornet whose hind legs had just been stepped on.

"Now, Mom," said Joe placatingly, "Let the kid alone. He didn't mean anything. He's in trouble. I know how it is."

"Mom, it's true. Those answers you gave me were all wrong," piped up Junior who was now in a safe place near the back door.

"Joe, you must stop doing that boy's homework. You fuss over him and spoil him every night. Then I must put up with him in the day time. This will be the last time you help him. If he can't keep up in school, we will find him a job," said Mom in a very determined tone of voice.

"If my answers are wrong tomorrow, I'm going to quit school and join the Army. Remember what you said one time Pop? You did mean it didn't you," trilled Junior all excited at the thought of a uniform.

Mom looked as though a bomb had burst under the table. She looked from one to the other and then started to cry.

"My baby, my baby," shrieked Mom. "You would take my baby away from me and leave me all alone. Mother always told me you would come to no good end. To think it would have to be like this."

Junior promised not to join the Army. It was manly of him to make the promise. He was three years too young. But, it comforted Mom. Joe looked over the kid's homework and soon found the tangle and unraveled it for Junior. Joe went back to his doodling.

The facts were clear. No one could mistake them. But, they refused to make sense on paper. The janitors' broom multiplication table refused to convert to a simple graph. Something that would hold water. The more Joe sweated, the madder he became. Two and two always added up to four. Once more Joe realized that his education lacked finesse. Four was a reactionary answer. Modern new deal practice demanded an answer of three. Joe began thinking of the advertisements running every day in the classified section. Psychic astrologers. Maybe that was what he needed.

About eleven Mom would say, "Joey, it's bed time." Joe merely grunted as he crumpled a sheet of paper and started to make zigzag lines on a new sheet. When the clock chimed midnight, Joe would get another call. Mom's voice would be acidly sweet, "Joe, are you going to stay up all night?" This question usually came at a time when he was mentally castigating Oscar Graphchart and telling off the boss in no uncertain terms.

Joe's angry voice would float in to Mom with a hot retort, "How can I work all day and think at night if you keep butting in with your two cents?" The ensuing argument always ended in the usual household compromise: Joe went to bed.

In the morning he was so tired that he sagged like a loose sheet on a long draw. The coffee brought no consolation; it was as bitter as his thoughts. The eggs were a stale smear of yellow ink on a palette knife. The toast was burned like a mat dropped into the melting pot. As he hurried out of the house, he, for a change, got in the last word. "I'm tired of eating prepared sawdust?" he shouted as he slammed the door.

Mom was smart and knew it was time to call a halt to this monkey business. She knew Joe was not mad at her. Something was wrong at the office. Mom thought of calling the boss. The moment

THUS FAR:

THE Daub Publishing Company has been having growing pains for some time. Originally, the firm had six employees—now it has many times that number. Joe Bloe delivered papers and ran errands part time for Publisher Daub while going to school. After finishing school, he became a full-time employee. As time passed, Joe was promoted to the position of foreman. Occasionally, Publisher Daub gives Joe additional responsibilities without corresponding increases in pay or the requisite executive authority. The Daub Publishing Company has been strictly a one-man operation plant. Meanwhile the company has been growing, both in business volume and number of employees. Daub demands detailed reports and then cries when he gets them. He is more and more annoyed by the petty details brought to him by Foreman Joe Bloe.

Of a sudden, the Boss introduces a business expert, Oscar Graphchart (who, by the way is a distant relative of his wife's), recently graduated from a statistical school. It seems that a preliminary conference between Publisher Daub and Oscar has left a deep impression upon the former. Next day, the Boss invites Joe to a dinner meeting where he is introduced to Oscar. Oscar talked long and learnedly about modern business methods. Joe listened attentively and became bewildered. Out of the welter of statistical terms, Joe managed to get the one word "Facts", and the expression of them by means of charts in relation to keeping records of plant maintenance and production. He was smart enough to understand that the best course to pursue would be not to antagonize the business expert. He resolves to furnish plant facts to the Boss by means of charts in the future.

Now, in this third installment, let's see how Joe (aided and abetted by the faithful and cooperative Mrs.) has worked himself into a fair approach to and understanding of his immediate problems.

she dialed the number, she knew that tactic was as wrong as holding a baby's head under water to stop it's squalling. She dropped the phone like a hot skillet. She rubbed her hands as though they were burned. It would never do to let the boss think Joe was off base, or that family trouble pied the type in the Bloe household. Instead, she called Joe. It was a simple matter to invent a wealthy sick aunt and to tell Joe to get off on Saturday. The Old Man grunted approval of the request.

Next morning, loud shouts and shrieking laughter awakened Joe. He muttered and turned over. Continued noise kept him awake. He pondered on Junior's failings. The kid could never get up on school days. But on Saturdays he was up hours early. Then Joe grinned. He remembered his own days in knee pants. Mom came in and turned on the light. She had a hot cup of coffee for Joe. She laid out his old clothes and reminded him that his old shoes were in the garage. Her face brightened the room like the moon silvering a lake on a moonlight night.

Not until he was dressed did he realize that something was up. A visit to a wealthy sick aunt was not indicated. He found breakfast ready, the kind a woodsman loves: a leaning tower of wheat cakes, a yard of country sausage and more hot steaming java. With one hand Junior was trying to butter some cakes. The other was toying with Joe's new automatic reel. Then Joe realized the aunt story was fiction. Mom had connived a fishing trip for Joe and Junior.

As Joe tootled the car up the mountain, the crisp bracing air blew the cobwebs from his brain. He looked around and what he saw was good. The snow-capped peaks glittered in the early morning light. The sky changed color every minute. The dew on the leaves made the trees look silvery. Wild flowers wove a colorful pattern in nature's brown tapestry. The cattle grazing in the valley gave Joe a feeling of peace and security in a war torn world. He thought of his problem as something from another world. His worry was like a leader line protruding above the level of a form; it seemed so small and insignificant.

Junior was throwing bait before the car was properly parked. By the time Joe had his tackle arranged, Junior was willing to take a lesson.

"Son," said Joe chestily, "Keep your eye on the old master and do everything the way I do it. Keep your big mouth shut. If you just gotta holler, go back up the hill and imitate an Indian. But not here. Now watch. See how that fly dropped right in back of that big boulder? Now, you try it. Watch your back lash. Whe-e-e-e-e! For Pete's sake, kid, push that button. Bring him in. What yuh waiting for?

"Pop," orated Junior in his best Sunday School manner, "It's your turn to take a walk up the hill."

"You win, kid," said Joe humbly. "I apologize. Now, suppose we both shut up and do some fishing. Have you got it down pat?"

After a picnic lunch, Junior fished alone. Joe found his brief case in the car. Mom had thoughtfully put it there. Here under this tree, completely relaxed, he wasn't mad any more. He chuckled as he skimmed through the notes he had made at the office. None of the notes discussed facts. All were concerned with his shop reactions caused by anger, fear, hate and rage. Then he found himself. He discarded immaterial notes and doodles. He then set down everything connected with the janitor episode and separated his data into cause and effect. Thus he found his real problem was one of human relations.

"Sure," piped up Junior cockily, "I betcha I ketch more than you."

Joe moved up the stream. The next six rainbows went into his creel. Soon Junior was subdued and willing and anxious to take another lesson. It reminded Joe of the many times he had jumped at conclusions when he thought he knew it all. He remembered Granny's frequent remark, 'Pride goeth before a fall'. Just a chip off the old block, thought Joe proudly, as he helped Junior hook the next one.

After a picnic lunch, Junior fished alone. Joe found his brief case in the car. Mom had thoughtfully stuffed it full of Joe's scribblings and doodles. He made himself comfortable under a tree. Now, completely relaxed, he wasn't mad any more. He chuckled as he skimmed through his notes. He was seeing himself in retrospect. It was almost as though he was looking at a completely different person—at a goof in a comic strip. He wondered how he could have been so blind. Many of the notes were identical. None discussed facts. All were concerned with his reactions caused by eruptions of anger, fear, hate and rage.

Suddenly Joe realized something. He wished some genii would come along and kick him right where he was sitting. It was evident that facts had been ignored, had been completely overlooked. The janitors' broom tabulation was the only thing worth saving. That was based on facts. The rest, viewed calmly, looked like a wet dream. He began to think of his problem as he would about one of Junior's jig saw puzzles. The comparison was perfect. To complete the puzzle, all parts had to fit together exactly. His own remarks to Junior about Grampa came back to plague him. He realized that he had not taken his own medicine. He had griped all week about effects. He had not searched for the cause. He had not tabulated all the facts.

After discarding all notes and doodles, Joe began his task systematically. He wrote down everything connected with the janitor episode. Nothing, no matter how trivial, was omitted. Then he separated his new data into cause and effect. All duplications were canceled. The final result astounded him. He realized that this rumpus was not janitors' broom trouble. The real problem was one of human relations.

Suddenly Joe felt like a new man. He had, for the first time, viewed a problem impersonally. It was a new experience. It was just like seeing a movie on a screen. Often he had selected the villain in the early part of a mystery play. The analogy held. Digging out the facts was just like playing detective. He recognized that he was at fault from beginning to end. Joe felt quite grown up, because he had changed from a child's way of responding emotionally to a man's way of grasping data objectively.

Joe snickered as he thought of some of the by-play with the janitors. Ken Sweep, the seventy-year-old janitor, had angrily threatened him for interference. All four janitors had as much as offered to beat him up. Some of the near tragedy now seemed very funny. Joe rolled around in the grass, bellering and whooping. He made so much noise that

Joe shooed Mom out on the front porch while he and Junior did the dinner dishes. There she found the box of candy Joe brought in when returning from the fishing trip. Mom rocked contentedly and smiled at the moon. All was serene in the Bloe household.

Junior scrambled up from the stream. Joe, fearful that Junior would see some of his notes, gave him a plausible explanation and solicitiously inquired as to fishing luck.

"I ain't had a bite in an hour, Pop. Do you think they have all gone to prayer meeting?" inquired Junior, who by this time was beginning to feel lonely and sorry for himself.

"All you have to do is outsmart 'em. Here, try a Doctor. Get over there next that tree and cast in the pool above it," said Joe very quietly so that Junior would not be suspicious concerning his labors. Joe knew that if he definitely indicated to Junior that he wanted to be alone, hell and high water would not budge Junior. Joe's stratagem worked. Junior again tried his luck. "Never do," thought Joe, "to let Junior find out what an ass his dad had been." Junior thought his Pop was the smartest man in all the world. Joe wanted to keep it that way.

To impress all the circumstances on his mind, Joe wrote out his net summary of cause and effect. To each item he added his own interpretation. Joe's analysis was thorough and complete. Here it is:

1.—Ivory Slope, working janitor foreman for 30 years, passed away in February. Boss thought janitors didn't need a supervisor. Changed his mind and gave it to me as an extra job in May. No extra pay.

(*That's where I slipped. Mad because no extra dough. Paid no attention. Didn't take time to talk to men, examine their equipment or check their working conditions. Didn't use my head. One hour's talk with the men right at the start would have saved all this grief.*)

2.—Two janitors scrapped because one of them had a new broom.

(*Stopped the fight. Threatened to spank 'em for scrapping about a lousy broom. Both of them old enough to be my father. Brooms are the tools of their trade. Every man needs good tools. They sure had two good reasons for being mad at me.*)

3.—All four janitors mad at me later.

(*Just grabbed up the first four brooms I could lay my hands on. Handed them out and made them all go to work. Not one had his own broom. Everyone should have his own tools. New ones. Let each man wear out his own himself.*)

4.—Various department employees mad at me.

(*Janitors had a chip on their shoulders. They couldn't take it out on me so they were impolite and impertinent to other employees. Comes right back on my neck.*)

5.—All department managers mad at me.

(*The janitors didn't clean up right. Purposely left a mess around each department boss's desk. They knew this would get some kind of action. Sure did. And, did I catch hell.*)

6.—The Old Man was peeved.

(*That ain't no word for it. He was boiling mad a couple times. Guess he knew it was my fault from the start. Guess he thought I was alibiing. Didn't pin it on me. Just let me sweat. Guess he wanted to find out if I could clean it up myself. I will—and how!*)

7.—Mom was sore.

(*Gotta take home a box of candy.*)

8.—Ernie cut me short and acted pretty mad.

(*It's no wonder. I've been braggin' to him for years. That night I was crying around like a sick pup.*)

9.—The boys at the club quit inviting me in the game.

(*They always thought I was a big shot. Guess they figured different when I started griping around.*)

It was dusk when Joe finished his masterpiece. He folded the papers and carefully inserted them in the brief case. He lay back against the tree lost in reverie. Grampa and some of the stories he told at apple-squeezing time came to mind. The one about Adam and Eve was good. That one about Noah was a honey. Joe made a mental note to pass them on to Junior. Good lesson for the kid. Grampa knew how to look for facts. Knew how to use them, too.

Joe came to with a start. He let out a yelp and jumped up. Junior shrieked. That was one on Pop. Fun to see him jump like that just because of a little ear tickling. Junior was tired and ready to go home. His creel was nearly full. Twelve rainbows and several blue gills.

It was long after dark when Joe and Junior arrived home. Mom had taken no chances. A big pot of stew was on the stove. A big apple pie was browning in the oven. This preparation meant nothing to the doughty fishermen.

"Mom, we got fish. Look! I caught 'em. Ain't they beauties? Can we have some right now?" cried Junior, his eyes bulging out with pride.

"Damn right we are going to eat some," said the head of the house in masterful tones. "We are going to fix 'em ourselves, too—to make sure they are cooked just right. Mom, hide that junk on the stove. Vamoose."

Soon fish were frying, Mom's boiled potatoes were frying with onions, the watercress was doused with oil and lemon juice and the coffee pot was steaming. Dinner was a huge success. The menfolk waited on Mom hand and foot. Nothing was too good for her. She beamed with pride.

The amateur cooks cleaned up the table. Joe washed the dishes and handed them to Junior to dry. The day's exploits were recounted in detail. The one that got away was cussed plenty.

After dinner Mom was shooed out to the front porch. There she found the box of candy Joe had purchased for her. Mom rocked contentedly and smiled at the moon. Joe helped Junior with his home work. All was serene in the Bloe household. (*To Be Continued*)

JOE BLOE'S NOTE BOOK

Notes made after listening to and analyzing Oscar Graphchart's erudite exposition of the principles of plant organization.

Fundamentals of Organization	*Fundamentals of Control by Organization*
1.—Lines of authority must be clearly defined.	a.—Planning
2.—Line authority should be undivided.	b.—Organizing
3.—Executive responsibility and authority should be co-equal.	c.—Directing
4.—Suitable checks and balances should be maintained.	d.—Staffing
5.—The number of subordinates reporting to an executive should be limited.	e.—Coordinating
6.—An organization should aim to make the best utilization of human resources.	f.—Reporting
7.—An organization should strive to be self-perpetuating.	g.—Budgeting

423 Replies received by ANPA

Mechanical Department in response to 1943 Conference By Mail questionnaires — Replies being correlated by committee

THE 1943 ANPA Mechanical Conference By Mail, while not exactly a substitute for the usual annual "live" conference, has been proceeding satisfactorily. As was announced in the June ANPA Mechanical Conference in Print Edition of *Printing Equipment Engineer*, this year's Conference is being conducted by mail under supervision of the Mechanical Committee, which is composed of active newspaper mechanical executives. Chairman John W. Park divided the committee personnel into six subcommittees representing as many of the mechanical departments in the newspaper plant. The Committees prepared questionnaires containing technical questions. These questionnaires were mailed to ANPA member-offices by the Mechanical Department offices in New York. In addition, the request was made that any office having knotty production problems under present conditions could send them in to the Mechanical Department office to be answered by the proper subcommittee.

As of June 25, Manager Walter E. Wines of the Mechanical Department, states that 60 replies were received to the engraving department questionnaire; 87 were received pertaining to the mail room questionnaire; 98 replies to the composing room, 92 to the stereotype room, and 86 to the pressroom. This makes a total of 423 replies. In turn, the answers are being relayed to the appropriate members of the mechanical committee. Thus it will be seen that a considerable amount of time and effort must be spent by the various committee members in digesting and correlating the replies.

After the various departmental sub-committees have completed their work of editing the replies submitted in response to the original questionnaires, they will be collated into bulletins, one for each mechanical department. These will be mailed successively to member offices of the American Newspaper Publishers' Association. Because of the heavy preparatory work involved, no intimation has been received as to just when the first Convention By Mail Bulletin will be sent out.

A couple interesting sidelights are worth passing on to our readers. Manager Wines reports that a number of descriptions (with photos) related to gadgets have been received. These will be included in the various bulletins. Another interesting thing is the acceptance and usage by mechanical executives of trade names to identify manufacturers' products in the answers received in response to the questionnaires.

Since this year's Mechanical Conference is being held by mail for the first time in the history of the ANPA, the results will be watched with interest. This is a novel situation, but if mechanical executives can express themselves via the printed word as well as they can do it orally, then the main objective of the Conference By Mail will have been accomplished.

Manufacturers and suppliers who usually attend the "live" annual meetings are also taking great interest in the Conference By Mail. They participated, along with *Printing Equipment Engineer*, in our June Conference In Print Edition.

Research Brings Results

IN a recent issue of the *Electrotypers & Stereotypers Bulletin*, Research Metallurgists R. M. Schaffert and Bruce W. Gonser of Battelle Memorial Institute, Columbus, Ohio, present a comprehensive article related to the successful electrodeposition of iron in printing plate production. The research work was sponsored by Printing Plates Research, Inc., a non-profit corporation which was organized in 1941. The corporation conducts research and development work with respect to printing plates for its members. Printing Plates Research made the report available to aid other electrotypers and stereotypers and for the benefit of the printing trade in general. The authors report that some 125 different iron plating solutions were tried, using various salts and addition agents. The best results were obtained with a combination sulphate-chloride bath. The bath components are composed of ferrous sulfate, ferrous chloride and ammonium chloride in definite amounts. The solution will produce deposits of electrolytic iron satisfactory for normal electrotyping operations and for the hard surfacing of stereotypes. The bath control is said not to be too technical for commercial practice. Iron anodes are used, the electrotype mold serving as the cathode. The iron can be plated on treated lead molds, or on wax molds previously oxidized with copper or silvered with a silver spray apparatus. Mechanical means are used to prevent pitting.

It is reported that in laboratory tests samples of electrolytic iron shells, of thickness ranging from 0.004 in. to 0.010 in. were backed with electrotype metal and curved cold. These samples were curved to a radius of about 6 in. before cracks were observed. It is also reported that a number of iron-copper electrotypes with iron deposits of 0.003 in. to 0.005 in. were curved to 7½ in. radius on an Ostrander hot bender at the VanBolt-Kreber Electrotype Co., Columbus, Ohio. No checking or cracking was observed.

Micro-hardness tests on electrolytic iron as compared to electrolytic copper and nickel demonstrate that the iron is much harder than nickel and should withstand much longer wear than nickel in printing plates.

The authors conclude their exhaustive article by observing: "It has been demonstrated, however, that copper-less flat plates can be made under plant conditions without difficulty and at about the same rate of production as for copper electrotypes.

War Efforts Convention

to be held in Memphis, Tenn., August 10, 11 and 12, will be devoted to discussions of wartime topics in relation to printing industry

AT the time of going to press with the July issue of *Printing Equipment Engineer*, wartime conservation and technical subjects which will dominate the 1943 International Craftsmen's convention at Memphis, Tenn., August 10, 11 and 12 are well in hand. The convention will be held at Hotel Peabody.

It has been announced that ODT has indicated no curtailment will be requested in convention attendance provided the technical and educational features of the program are stressed. It seems to *Printing Equipment Engineer* that a convention such as this one can be made to contribute materially to advancement of war objectives simply for the reason that conservation of materials, labor and methods dominate the program. Then, too, the latest Printing and Publishing Division information will be passed on to those attending the meeting by executives of the Division. In this respect, Program Chairman Douglas C. McMurtrie has formulated a worthwhile program less the usual entertainment frills.

How Craftsmen May Help Convention Committee

Through General Chairman Ray F. Brown, the Memphis Club is asking the cooperation of all Craftsmen who expect to attend the convention. The first of these two requests is that you make your hotel reservation as soon as possible. Address Hotel Peabody, Memphis, Tenn.

The second request is with respect to advance registrations. These are being solicited. Cooperation will facilitate the handling of the convention—it enables the local committee to proceed with its financial obligations in much better manner, and it will enable the committee to register you quickly when you arrive at the registration desk. Any Craftsman from a city in which a convention has been held will appreciate how much these two suggestions will facilitate matters. It has been announced there will be no increase in registration fees—$10 for the men and $7.50 for the women. Advance registration fees and applications should be sent to Joe F. Dorsey, 90 Hernando, Memphis, Tenn. Make check payable to Memphis Club of Printing House Craftsmen.

The Program

At the time of going to press, the program has been almost completed by Educational Commission Chairman Douglas C. McMurtrie. Predominantly, the program is devoted purely to industry matters of a serious nature which fit excellently into a wartime gathering. Immediately following is an outline of the program:

Tuesday Morning, August 10

Although the subjects which the speakers will discuss have not been announced officially in every case, for the opening session on Tuesday morning, Hon. John Deviny, U. S. Deputy Public Printer, will be the first speaker on the program.

Next on the speaking program will be William C. Huebner, of Huebner Laboratories, New York, who will give a forecast of impending developments in printing and photo-mechanical processes.

Leon A. Link of WPB's Printing and Publishing Division is slated to present the current attitude of government authorities with respect to the printing industry.

John M. Wolff, jr., Chief of Printing and Publishing Division's Planographic (Lithographic) Section, and who also is president of St. Louis's Wolff Printing Company, will discuss government aims with special reference to offset-lithography.

Philip Schneider, Chief of the Relief (Letterpress) Printing Section of the Printing and Publishing Division, will also speak at the opening session.

Tuesday Afternoon, August 10

The first convention clinic will be held on Tuesday afternoon. This clinic will be supervised by Co-Chairman Michael Stevens of the Harbor Press, New York, who also was recently president of the New York Craftsmen's Club, and by Co-Chairman Richard N. McArthur, Atlanta (Ga.) typographer. Other able type authorities have agreed to be present and will contribute to the general discussion.

Tuesday Evening, August 10

At the Club Management Dinner, which was inaugurated at the Baltimore 1941 convention, ample time will be allowed for discussion of the many problems faced and being surmounted by officers of local clubs. Douglas C. McMurtrie will preside. Some of the subjects to be dissected and analyzed are (1) Program Building in Wartime; (2) Membership Maintenance and Growth; (3) Recruiting and Training Club Officers; (4) Club Prestige in the Community.

Wednesday Morning, August 11

Scheduled to begin at 9 o'clock sharp, there will be a brief business session. Immediately following a technical clinic on *New Materials and Processes Under War Economy* will be held. Co-Chairmen for this meeting are Superintendent Clarence Groettum of the Jensen Printing Co., Minneapolis, Minn., and George Greenberger of Buffalo's J. W. Clement Co. These men, it is announced, will act as co-chairmen in co-operation with E. G. Hubbell of the Meredith Publishing Co., Des Moines, Ia.

Wednesday Afternoon, August 11

The clinic on *Letterpress Platemaking and Printing* will be held Wednesday afternoon, August 11. The meeting will be presided over by Third Intl. Vice President H. Guy Bradley who is also production manager of the Printing Department of Eli Lilley and Co., Indianapolis, and Arthur Metcalfe, who is reputed to be a highly competent Montreal (Can.) printer. Authorities on electrotyping, stereotyping, press design, plastic plates and other specialties have agreed to participate in the discussion.

Thursday Morning, August 12

Promptly at 9 o'clock on Thursday morning, resolutions will be adopted and officers for the coming year will be elected.

As soon as official business has been disposed of, a clinic on *Job Planning and Production Control* will be held. E. G. Hub-

(*Continued on Page 18*)

Obsolete Plate Order Observance Here Again

PERHAPS it isn't necessary to remind you that July 1 marked the commencement of the third quarter period for scrapping all obsolete printing plates under the provisions of WPB Order M-99 issued August 5, 1942.

A printing plate is obsolete if on the first day of any calendar quarter it has been in existence but has not been used for one year or more and if there is no "assured future use" for the plate. M-99 forbids receipt, sale, and use of restricted metal by persons who fail to dispose of obsolete plates.

A printing plate, as defined in Order M-99, is any kind or shape of metal printing plate or other metal form used in the printing process, except those plates which are composed *only* of lead, tin and antimony.

FOR THE SECOND TIME the men and women of Linotype have won the Army-Navy Production Award for meritorious services on the war production front.

The citation reads: "You have continued to maintain the high standard that you set for yourselves and which won for you distinction more than six months ago. You may well be proud of your achievement.

"The White Star, which the renewal adds to your Army-Navy Production Flag, is the symbol of appreciation from the Armed Forces for your continued effort and patriotism."

LINOTYPE on TWO FRONTS

ON THE HOME FRONT

IN ADDITION TO our war production, the free Linotype Touring Clinics continue to help printers and publishers maintain the highest production efficiency with their composing equipment.

These Maintenance Clinics are bringing to us words of appreciation from all parts of the country. "We wish you to know," writes one publisher, "that we greatly appreciate the co-operation of the Linotype Company. It is up to all of us to conserve as never before and you have pointed the way."

These are serious, technical sessions—led by Linotype experts. Watch for the notice of the Clinic in your section!

Set in Linotype Baskerville, Metrothin No. 2 and Spartan Black

Equipment and Supplies

Improved Haberule Visual Copy Caster

Some time ago, *Printing Equipment Engineer* published an article about the Haberule Visual Copy-Caster, or type-line estimator. By means of the Copy-Caster the character count in any type face and in any measure from 1 to 30 picas may be found. Catalogued in the Copy-Caster are 4000 type fonts, in 763 type faces and in every size from 4 pt. to 18 pt.

Mr. Haber now announces that the first edition has been exhausted and an improved instrument is now available. A plastic type gauge has been added. The gauge is sheathed in a pocket within the booklet. Quick computation of the number of lines of type in 6, 7, 8, 9, 10, 11 and 12 pt. may be made with the gauge. The reverse side of the gauge bears on opposite edges a 36 pica scale of both Elite and Pica typewriter characters.

In using the Visual Copy-Caster, the name of the manufacturer of the type face is located by means of a thumb indexed card which shows one of seven manufacturers of type faces. On each card opposite the name of the type face is a table showing the point sizes in which the face is made, up to and including 18 pt. In one of the columns under each point size will be found a scale number. By referring to one of 53 numbered scales (as instructed to do by the card), the number of characters which will go into any line measure (from 1 pica to 30 picas) is indicated. The scales are direct reading and no mathematical computation is necessary.

Directions for obtaining character count of type faces larger than 18 pt., for all-cap composition, and for line measures wider than 30 picas are furnished in the Copy-Caster.

Further information may be secured from The Haberule Company, 209 West 38th St., New York, New York.

Lounsbury Binding Method for Publications

The Rutherford Press, owners of the Lounsbury Patent Binding, have appointed J. Hayden Twiss, 205 E. 42nd Street, New York, 17, N. Y. as its sole agent to introduce and promote the Lounsbury Bind. This process requires neither wire nor sewing and is achieved by slotting the printed signatures. The Lounsbury Binding has been used successfully for several years and is particularly applicable to magazines normally bound by side wire. Government limitation of paper and binders wire has stimulated great interest for this type of binding in the publication field.

The binding is accomplished by slotting the last fold of printed signatures and then bound on standard gathering and covering equipment by applying a flexible glue instead of wire stitching. Publications bound by this method open flat, similar to sewn books and hold together exceedingly well because of the slotting arrangement. Medical Economics and Registered Nurse have been bound by this method since 1940 and beginning with January of this year McGraw-Hill publications started binding most of their publications which were formerly bound by side wire.

Many leading trade publications are now being bound by this method or will be in production with their July or August issues. Several class magazines are also experimenting for application on their high speed rotary presses as are other commercial and institutional publications.

The Lounsbury Binding Method can be applied to any publication bound on regular gathering and covering machines by simply disconnecting the stitching heads. The method would not apply to side-wire bindings. It replaces certain sewed and side-stitched (square back) books. It is now used by publications regularly printed on flatbed presses and folded on standard folding equipment such as Dexter, Brown, Chambers, Cleveland, and the like.

It is reported that executives of several publications printed on high-speed rotary presses are experimenting with a method of slotting the paper on web presses.

The Lounsbury Bind consists simply of making slits through printed signatures in the gutter fold of each section of the magazine through which is applied a sufficient quantity of glue to adhere to the inside pages of the section to each other and to the cover, enough glue also being released to adhere the outside binding edge of each section to the inside of the cover fold. The result is a square-back book with no bulking at the gutter and opens flat at any page.

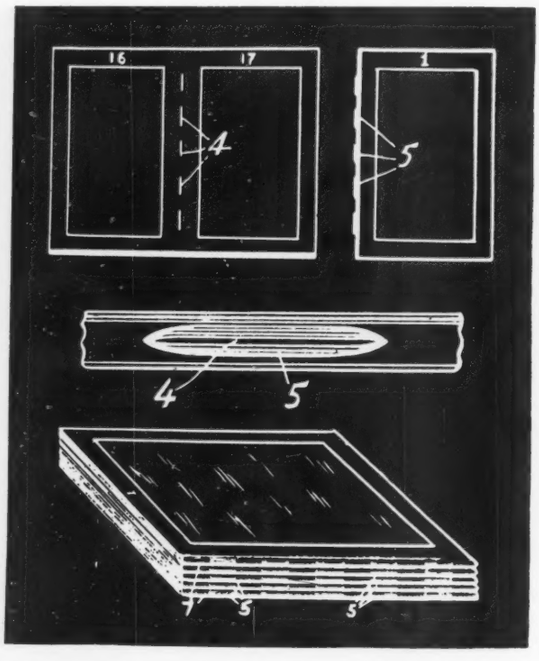
Slotting of the sections is accomplished on the folding machine by inserting a slotting blade on a folding roller next to the last fold. On Cleveland folders, for instance, the slotting can be done by the use of a standard part. By setting the blade on the slitter bar next to the last fold the slotting is accomplished.

This binding method is said to be adaptable to right-angle folding without extensive folding equipment alterations.

No mechanical changes are necessary on either gathering or covering machines. Minor adjustments may be made quickly.

A highly flexible, penetrating glue, closely resembling perfect binding glue, has been developed for this binding.

It is asserted that the Lounsbury Bind holds two and four-page inserts securely.



Binding by the Lounsbury Method.—At top left is a 32 page section before it receives last fold; dashes at *4* indicate position of slits punched at this stage. Top right: The section folded, with slits *5* (protrusion of edges is exaggerated for illustrative purposes). Center: Portion of fold enlarged to show mouth of slit (inner edges at *4*, outer edges at *5*.) Bottom: Collated set of four 32 page sections showing slits at *5* and unslit parts of folds at *7*.

War Efforts Convention

(Continued from Page 16)

bell of Meredith Publishing Co., Des Moines, Ia., will serve as one co-chairman with his associate chairman to be announced later.

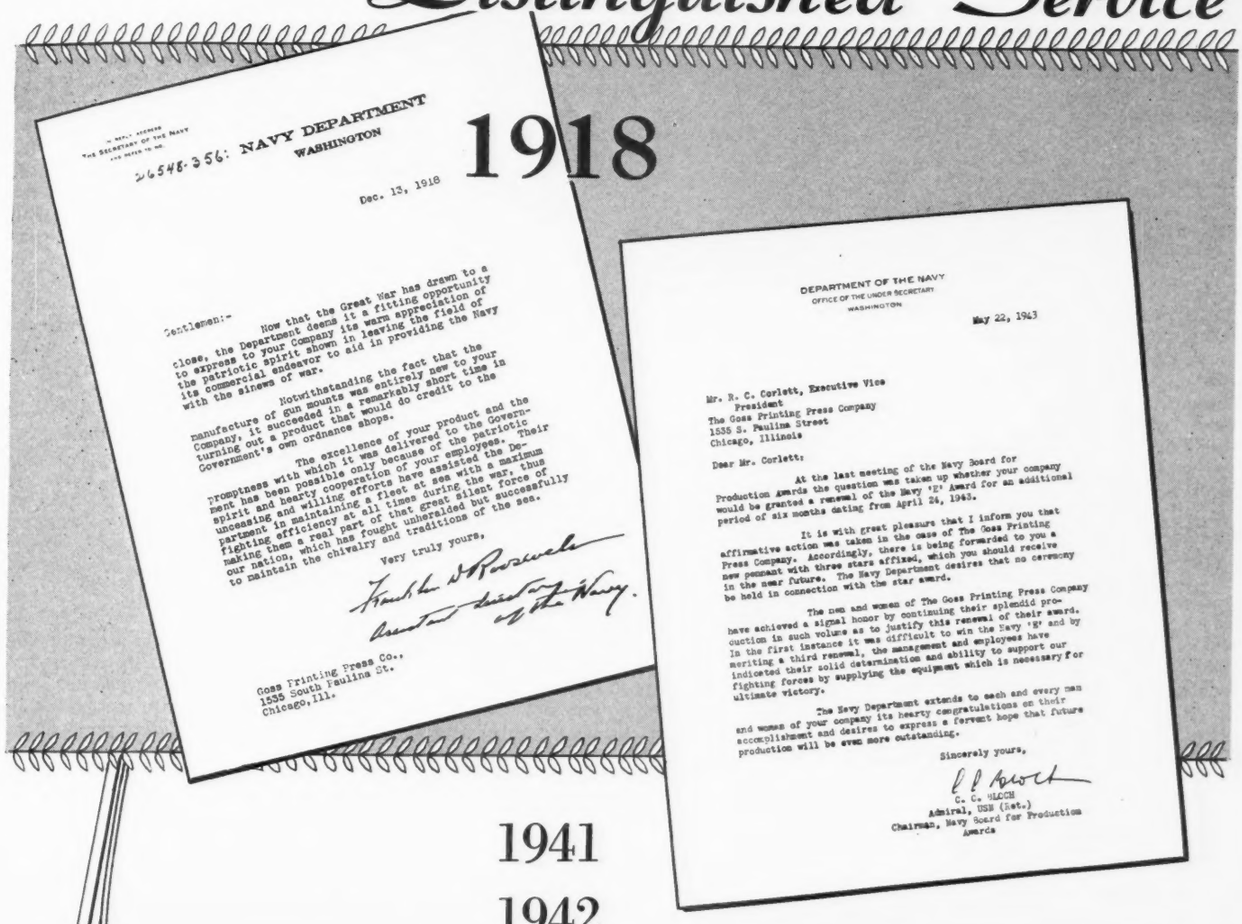
Thursday Afternoon, August 12

The *Offset Platemaking and Printing Clinic* will be held Thursday afternoon. Co-Chairmen for this meeting are Jack Hagen of Workman Mfg. Co., Chicago and George Kearsley of Edward Stern & Co., Philadelphia. Wm. C. Huebner of Huebner Laboratories, Wm. H. Wood of Harris-Seybold-Potter Co., and other authorities on offset-lith technique will contribute to the discussion.

Thursday Evening, August 12

At the dinner meeting on Thursday evening, the newly-elected officers will be installed.

For Continued Distinguished Service



1918

NAVY DEPARTMENT
WASHINGTON

26548-356:

Dec. 13, 1918

Gentlemen:-

Now that the Great War has drawn to a close, the Department deems it a fitting opportunity to express to your Company its warm appreciation of the patriotic spirit shown in leaving the field of its commercial endeavor to aid in providing the Navy with the sinews of war.

Notwithstanding the fact that the manufacture of gun mounts was entirely new to your Company, it succeeded in a remarkably short time in turning out a product that would do credit to the Government's own ordnance shops.

The excellence of your product and the promptness with which it was delivered to the Government has been possible only because of the patriotic spirit and hearty cooperation of your employees. Their unceasing and willing efforts have assisted the Department in maintaining a fleet at sea with a maximum fighting efficiency at all times during the war, thus making them a real part of that great silent force of our nation, which has fought unherald but successfully to maintain the chivalry and traditions of the sea.

Very truly yours,

Franklin D. Roosevelt
Assistant Secretary of the Navy.

Goss Printing Press Co.,
1535 South Paulina St.
Chicago, Ill.

DEPARTMENT OF THE NAVY
OFFICE OF THE UNDER SECRETARY
WASHINGTON

May 22, 1943

Mr. R. C. Corlett, Executive Vice President
The Goss Printing Press Company
1535 S. Paulina Street
Chicago, Illinois

Dear Mr. Corlett:

At the last meeting of the Navy Board for Production Awards the question was taken up whether your company would be granted a renewal of the Navy 'E' Award for an additional period of six months dating from April 24, 1943.

It is with great pleasure that I inform you that affirmative action was taken in the case of The Goss Printing Press Company. Accordingly, there is being forwarded to you a new pennant with three stars affixed, which you should receive in the near future. The Navy Department desires that no ceremony be held in connection with the star award.

The men and women of The Goss Printing Press Company have achieved a signal honor by continuing their splendid production in such volume as to justify this renewal of their award. In the first instance it was difficult to win the Navy 'E' and by meriting a third renewal, the management and employees have indicated their solid determination and ability to support our fighting forces by supplying the equipment which is necessary for ultimate victory.

The Navy Department extends to each and every man and woman of your company its hearty congratulations on their accomplishment and desires to express a fervent hope that future production will be even more outstanding.

Sincerely yours,

C. C. BLOCH
Admiral, USN (Ret.)
Chairman, Navy Board for Production Awards

1941
1942
1943

Serving the Navy in World War I was the privilege of Goss. In October, 1941 the traditional Navy "E" pennant, a recognition of outstanding effort in the production of ordnance materials vital to national defense in World War II, was awarded to Goss.

Today, Goss proudly displays this "E" burgee, whose three stars subsequently attached indicate continuous exceptional Production Performance during 1941 - 1942 - 1943. Only through continued patronage of the Printing Industry have the facilities of Goss become useful in wartime manufacturing. Therefore, these honors are shared equally with the Trade.

THE GOSS PRINTING PRESS CO., 1535 S. PAULINA ST., CHICAGO, U. S. A.
NEW YORK • SAN FRANCISCO • LONDON, ENGLAND

GOSS

Absenteeism, and the part to be played in its elimination by the advertiser and the printer

HERE'S another opportunity for production and mechanical executives to be of assistance to the managerial and sales executives of their plants—if they are not already familiar with the program of the Graphic Arts Victory Committee which was created solely for two purposes—(1) To point out ways in which printers and publishers can be of invaluable assistance to the war effort, and (2) To help the printer to help himself by pointing out ways and means for keeping his business on an essential basis.[1]

Now, to get down to the latest accomplishment of the Graphic Arts Victory Committee, we want to tell you about its newest help to printing plants. This consists of a 16 page booklet entitled *How Industry Can Cooperate with the U. S. Government Information Program to Reduce Absenteeism.*

The booklet contains ideas to help reduce absenteeism in industry. It is prepared in such form that your business executive associates, in making their contacts with printing customers will be in a position to suggest to your company's customers how they can tie in their advertising, house magazines, direct mail folders and inter-company forms with ways and means for reducing the absentee problem to the minimum.

As is regularly the case with the Graphic Arts Victory Committee's publications, the Absenteeism booklet provides your company's representatives something concrete and with which they can be of valuable service. Armed with this manual, they won't have to approach printing users empty-handed.

Printers are expected to utilize this manual in tying in printed matter with the Government campaign on Absenteeism. Many firms will be able to incorporate messages on absenteeism into their regular promotion. The manual will also aid firms which devote entire printed pieces to the war effort, as their contribution, since full official information is provided in the manual as to copy slants, material available, and suggested advertisements and printed pieces.

How this may be done will be readily understood by presenting a skeleton outline of the booklet content. First, there's an explanation showing that Absenteeism is a ball and chain on our war machine. Next are given the causes and cures of absenteeism. Then follows an explanation as to what Government is doing about absenteeism, how information can help reduce absenteeism, and objectives of advertising on absenteeism. Suggestions on informative advertising follows, after which is presented a layout in which Uncle Sam writes to five absentees. Next, we have letters to five people who were AWOL yesterday. Finally, miniature double-page spread showing miniature reproductions of printed pieces on the subject with suitable copy comment.

The manual on absenteeism is the fourth official government project which has been produced by the Graphic Arts Victory Committee—some in direct cooperation with government agencies, others with the War Advertising Council. Projects now in process include womanpower, anti-inflation, security of war information, home insulation, forest fires, basic food, housing and a number of others yet to be announced.

It has been announced by Director Henry Hoke of Graphic Arts Victory Committee that production of these manuals and guide books has been handled by the Committee through the generous cooperation of printers, lithographers, engravers, composition firms, artists, paper mills, and writers who have given of their time without charge.

Additional cooperation, it is pointed out by the Director, will be called for to help produce forthcoming projects. Interested firms and individuals are invited to participate. Inquiries should be directed to Committee headquarters at 17 East 42nd St., New York, New York.

[1]By the way, Mr. Executive, has your firm joined up with the Graphic Arts Victory Committee? If not, why don't you have the Old Man write to Graphic Arts Victory Committee, National City Bank Bldg., Madison Ave. at 42nd St., New York, New York?

WPB *News and Notes*

Stitching Wire Order Revoked

ON page 88, June issue of *Printing Equipment Engineer*, was published the pertinent points in WPB's Stitching Wire Order L-291, in which were set up regulations for the usage of stitching wire for certain types of booklets, blank paper and publications. It seems that after issuance of the order the limitations set up in the order as to the use of binding wire, number of stitches or staples permitted, thickness of matter bound, and the like, were found impractical and inoperative by a number of publishers. It was explained in a release by Director H. M. Bitner of the Printing and Publishing Division that failure of the order was due largely to the inflexibility of present binding and stapling machinery and the unavailability of new equipment. In certain instances, a single stitch would not hold a large bulky magazine together and consequently it was felt that pages would be lost and paper wasted. A new order designed to conserve stitching wire and yet making it possible for publishers to bind products satisfactorily is being drafted.

The Cork Situation

NEWSPAPER executives, and in particular stereotypers who use cork blankets in molding page forms, from time to time have speculated upon the use of substitute materials for molding in trying to conserve the available supply of cork, will be relieved when they learn about a recent report issued by WPB's Cork Industry Advisory Committee. It is reported that raw cork stocks in the United States are now at a peak, with ownership divided equally between government and industry. It is advised by the committee that no more cork be purchased by the government. The committee recommended that government and industry each maintain an inventory of 40,000 tons which, it is estimated, will guarantee two years' supply. While no specific information respecting the use of cork for stereotype molding blankets is available, yet it is believed the committee's statements reflects favorably upon the source of supply for this particular purpose.

Maximum Car Loading

IN a joint statement, the Printing and Publishing Division and the Pulp and Paper Division of WPB, ask the cooperation of converters, printers and publishers with respect to the loading of carload shipments of paper on skids, so as to fill the entire floor area of the car. In this way, compliance will be effected with Maximum Carloading ODT Order No. 18 Revised and Special Direction No. 5.

The working out of a satisfactory method for handling shipments are urged upon producers and users so as to comply fully with the order. They should also see that skids are continually piled with the maximum height of paper.

Suggestions for accomplishing maximum loading are as follows:

1. Allow critical sizes to be shipped on skids with short-wat runners. This may require a rehandling of paper in the plant or a study and revision of various "within the plant" side clearances.

2. Investigate packing critical sizes by some method other than skids. (Because they require the use of critical materials, cases are not the answer.)

3. Change paper requirements from critical sizes to non-critical.

Newsprint Cut Order Expected Momentarily

MOMENTARILY, as we go to press with the July issue, it is expected that the Printing and Publishing Division of WPB will issue an order by which publishers will be required to reduce the use of newsprint because the savings in newsprint which were antici-

(Continued on Page 31)

Printing Patents *issued May 25 to June 22 inclusive—Method for splicing web to new roll by wood; improved method for etching intaglio rolls; offset-lith color separation process; solvent type ink for quick drying after exposure to elevated temperatures granted to Dow; hot-melt ink for high-speed gravure and offset granted to Huber*

This data is compiled exclusively for *Printing Equipment Engineer* by Invention, Inc., is verified in the United States Patent Office, and is comprehensive of all patents in the field of each heading for the dates specified.

For copies of patents listed here, specify the patent numbers and send 10c for each separate patent (stamps not accepted) to the Commissioner of Patents, Washington, D. C.

Binding, Cutting, Perforating:

2,322,048. THIN TRANSPARENT OR SEMI-TRANSPARENT SHEETING which is designed for direct and adhesive union with wood, paper, etc. It is especially useful for the manufacture of protective transparent covers for books. Sheet is prepared by applying to a thin cellulose acetate or similar base sheet, a thin coating of a thermoplastic resin. Over the resin coating a material is applied which merges with the resin coating on the application of heat and pressure and enables the sheeting to be rolled on itself. An example of this composition comprises 2% maizite (zein), 80% ethyl alcohol and 18% water. Invented by Gale F. Nadeau and Clemens B. Starck, Rochester, N. Y. Assigned to Eastman Kodak Co., Rochester, N. Y. Application June 10, 1938. 6 claims.

Composing Room Equipment:

2,320,932. ATTACHMENT FOR ASSEMBLER MECHANISM of a Linotype machine of the type disclosed in patent 1,932,366, which removes the tension of the spring from the assembler slide when the line of matrices is being assembled in the elevator so as to reduce wearing of the star wheel and to greatly reduce jamming of the matrices in the elevator. Attachment eliminates the braking mechanism and will automatically return the assembler slide to an initial position each time the elevator rises. Invented by George H. Hutchison, Kansas City, Mo. Unassigned. Application February 13, 1942. 6 claims.

Feeding, Folding, Delivery:

2,320,656. METHOD OF SPLICING A WEB from a new roll to the web running at high speed from an expiring roll without the use of any auxiliary apparatus such as new roll speed-up means or timed web pressing or severing means. A layer of self-sticking adhesive is applied to both the outer surface of the web on the new roll at its leading edge and the inner surface of the running web adjacent its inner end. When the reduction in size of the running roll indicates that it is approaching its end, the operator turns a reel to move the new roll against the running web and the splicing operation is self-performed by the self-sticking adhesive layer arrangement. Invented by Oscar C. Roesen, Scarsdale, N. Y. Assigned to Wood Newspaper Machinery Corp., Plainfield, N. J. Application July 22, 1941. 27 claims.

2,320,657. METHOD AND APPARATUS FOR SPLICING A WEB from a new roll to a rapidly moving web from an expiring roll. The new roll is accelerated by direct contact between its surface and the running web while contact is prevented between the running web and the tacky adhesive at the leading end of the new web. This is accomplished by protective shields carried on the new roll. The shields are thereafter removed to permit the splicing contact when the new roll has been accelerated to the desired speed. Invented by Oscar C. Roesen, Scarsdale, N. Y. Assigned to Wood Newspaper Machinery Corp., Plainfield, N. J. Application August 6, 1941. 14 claims.

2,320,658. METHOD AND APPARATUS FOR SPLICING A WEB from a new roll to a rapidly moving web running from an expiring roll. A self-sticking adhesive is fixed to the web on a new roll at its leading edge. The new web roll is accelerated by direct contact between its surface and the running web and when the roll supplying the running web is sufficiently depleted, a sheet carrying a layer of the self-sticking adhesive is fixed to the surface of the running web as it approaches the point of contact with the new roll. Immediately thereafter the two self-sticking adhesive layers are brought together with the result that the leading end of the web on the new roll is spliced to the running web. Invented by Oscar C. Roesen, Scarsdale, N. Y. Assigned to Wood Newspaper Machinery Corp., Plainfield, N. J. Application January 13, 1942. 10 claims.

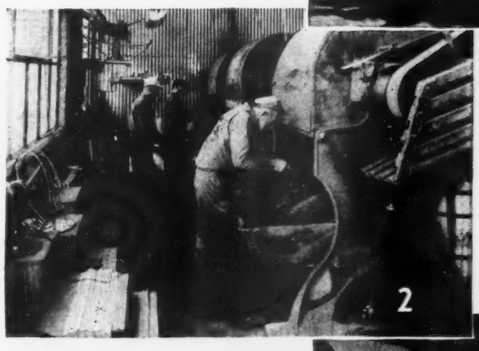
2,322,647. PAPER FOLDING ATTACHMENT for web type printing presses whereby the opposite edges of a continuously moving web may simultaneously be folded inwardly, and thereafter severed transversely and longitudinally to form single folded sheets in pairs. Means are provided for introducing a carbon transfer sheet, if desired, prior to folding of the edges of the web. The web is fed over a plate with sides that taper in width to a second plate of width half that of the web, and inclined from the first plate at a 45° angle. As the web passes over the first plate it tends to fold downwardly and in under the plate, curling completely under the second plate, and passing under a roller which completes the folding operation. Invented by John S. Luce, Oakland, Calif. Assigned to The Web Appliance Co., San Francisco, Calif. Application July 22, 1941. 7 claims.

Miscellaneous:

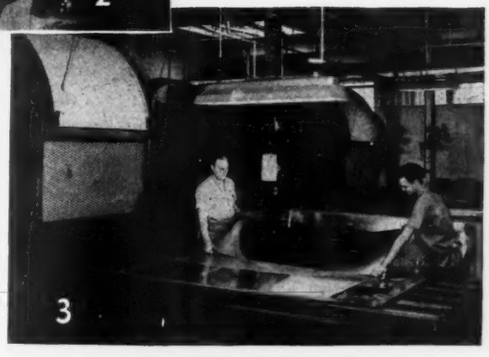
2,319,783. PROCESS FOR PRINTING LABELS for commercial food products, wherein the texts of one or more recipes in which any particular food item is an ingredient, is associated with portions or sections of pictures of the dishes prepared according to the recipe. Method comprizes assembling a number of dishes of food products prepared according to recipes for the dishes, photographing the assembly, preparing a set of basic master-plates from the photograph; preparing a printing film from the plates; cropping-out sections from figures on the film; registering the crop-outs into position in association with

Can you recognize these Finishes?

1. This is a photo-finish — not to be confused with a photo-engraving finish.



2. This shows the old method of producing a *finish* on zinc sheets — a method likely to leave ridges which result in streaks in the finished proofs.



3. These machines apply the new Machine-Cut *Finish* embodying an entirely new principle—leave the surface as flat as plate glass, but with sufficient "tooth" to hold the top.

NOTE: *A piece of wet charcoal rubbed across this surface will immediately reveal its excellence.*

Zomo Electric Zinc and A-Z Alloy are now made with this new Machine-Cut Finish. You can order them, plain or Backoted, from your regular metal supplier.

Cuts for this ad were made on 21 gauge Zomo Zinc Backoted flush mounted with double faced Backboard.

corresponding type-matter on a label-assembly and printing labels from the assembly. Invented by Gerald Murphy, Milwaukee, Wis. Assigned to The United States Printing & Lithograph Co., Cincinnati, Ohio. Application January 23, 1940. 8 claims.

2,319,903. PROCESS FOR PATTERNING IN RELIEF a cellulosic fabric, which consists in treating narrow, narrowly spaced areas of the fabric with a mixture of a water insoluble hydroxy ether of cellulose and a compatible dyestuff to render colored areas that are stiff and resistant to shrinkage under the action of a caustic. Other areas of the fabric are shrunk with a caustic to produce a permanent crinkle in at least some of the unshrunken fabric portions between the shrunken areas. Invented by Harold I. Huey, Saylesville, and William W. Russell, East Providence, R. I. Assigned to Sayles Finishing Plants, Inc. Saylesville, R. I. Application April 12, 1940. 4 claims.

2,320,710. MACHINE FOR CUTTING CONTINUOUSLY DELIVERED SHEET MATERIAL, such as double-faced corrugated board, into sections. It is of the type having a Reeves drive for changing the total time cycle of the cutting knives. Invention provides an improved linkage for adjusting the Reeves which does not require the use of any cams or cam gears but which will give a gradually varying degree of adjustment for equal increments of movement of the actuating member and is compactly arranged with respect to the Reeves. Invented by Herbert C. Behrens, Haddon Heights, N. J. Assigned to Samuel M. Langston Co., Camden, N. J. Application January 9, 1942. 14 claims.

2,322,393. STEREOSCOPIC PICTURE VIEWING DEVICE consisting of a carrier in the form of a card or panel of thin material having printed on one of its faces a stereoscopic picture and having two windows or sight openings through which the user views the picture. Device may be produced in the form of a book or catalog with the pictures printed on the leaves. A viewing device may be removably positioned within, or secured to, the book so that the viewing device may be conveniently removed when desired and used for viewing the stereoscopic pictures printed on the leaves of the book. Invented by Sidney Richardson, Hollywood, and Patsy N. Hopkins, Burbank, Calif. Unassigned. Application March 31, 1941. 2 claims.

Plate Making:

2,319,944. IMPROVED METHOD OF ETCHING INTAGLIO PRINTING ROLLS which reduces the occurrence of undercutting and which enables varying or controlling the depth of etching carried out at different points on a roll surface. Acid resist material such as thin asphaltum is first offset on a roll to be etched in accordance with the outline of a design desired to be etched on the roll. Additional resist material is then applied within the outline in the form of spaced-apart lines adapted to constitute a ground. The roll and resist material are then coated with hot gelatin. The gelatin is dried and the gelatin-coated roll is etched with iron perchloride while the gelatin coating, at all points, is in a state of uniform absorptivity with respect to the iron perchloride. Invented by John J. Ormond, Boston, Mass. Assigned two-thirds to Joseph D. Ramsey, Boston, Mass. Application June 30, 1941. 6 claims.

2,320,352. TRANSFERRING A PRINTING IMAGE TO THE SURFACE OF A PRINTING CYLINDER by means of sheets of carbon tissue having thereon matter or designs to be ultimately printed. These sheets are applied to the smooth surface of the printing cylinder so that the sheets and surface can be subjected successively to developing and etching fluids. The developed image on the sheets is thereby reproduced or etched on the surface of the cylinder. Feature of the invention is an apparatus for holding one or more carbon tissue sheets in registered and aligned position between a printing cylinder and a presser roll. Thereby the sheets are simultaneously and accurately applied to the cylinder upon movement of the presser roll against the cylinder and one man can register and lay down the sheets. Invented by Emil Ericksson, Chicago, Ill. Assigned to Standard Process Corp., Chicago, Ill. Application April 26, 1941. 24 claims.

2,320,914. PROCESS OF COLOR SEPARATION in lithography which partially eliminates the opaquing process, so that in a red, blue job, for example, only the part to be reproduced in one color is to be opaqued out and not the other. After the negative is made, part of it is opaqued out and a plate is printed from it which reproduces only the part which was left clear. A dye solution of fuchsine crystals dissolved in methyl alcohol is then applied to the part of the negative which was not opaqued out and the opaque previously applied to the other part is removed. A yellow light transmitting member is superimposed over the negative and a print is made to reproduce the part to which the solution was not applied. Invented by James Cunningham, New York, N. Y. Assigned twenty per cent to Michael Dichiaro, Brooklyn, N. Y. Application January 29, 1942. 4 claims.

2,321,760. METHOD OF PREPARING NEGATIVES for photo-printing in color whereby the printing plate or negative for making the plate may be made with a suitable overlap directly by photographing from the original or "copy." The method consists of outlining with boundary lines the respective color areas in an original to be reproduced, covering the outlined original with successive transparent sheets, one for each plate to be made, and blacking the areas of the transparent sheet within the boundary lines corresponding to the selected color of the sheet. Negatives are photographed from assemblies of the transparent sheets and "copy" to reproduce transparent areas corresponding to the black area including the width of the margin lines. Invented by Walter Martin, Orange, N. J. Unassigned. Application April 24, 1941. 5 claims.

2,322,129. ROUTER FOR CURVED STEREOTYPE PLATES which is enclosed so that flying chips are confined within the enclosure. Various controls are readily accessible and the work is clearly visible from the exterior of the enclosure. The router head is, selectively, either manually or power fed transversely of the work, whereby manual feed is employed for short transverse travel or power feed may be employed for longer transverse travel. The router head is shifted perpendicularly for engaging or disengaging the work with minimum effort and with perpendicular cutting contact. Invented by Paul S. Hawkins, Los Angeles, Calif. Unassigned. Application December 6, 1939. 4 claims.

2,322,136. METHOD OF REPRODUCING AN ORIGINAL IMAGE, employing a ferrogelatine reproduction surface. The original image is produced non-photographically, i.e. drawn or written on any suitable surface, with a graphite pencil having in it a chemical reagent. This reagent is preferably potassium dichromate, an oxidizer. The original is applied by direct contact to an aqueous ferrogelatine surface printing plate, the image faced to the plate. When the image containing the oxidizer contacts the moist ferrogelatine surface, the metal sulphate therein oxidizes forming an image of a hydroxide precipitate with gelatine to which printers ink will adhere. Faintness of the original image in no way controls the quality of the reproduction. That is determined by the uniformity of the dispersion of the chemical reagent or oxidizer in the original image. Invented by Edward Jahoda, Detroit, Mich. Assigned to Walter M. Fuchs, Detroit, Mich. Application September 17, 1941. 2 claims.

2,322,540. QUICK METHOD OF MAKING COLORED PRINTING PLATES and a novel process of applying resist material to printing rolls to be engraved, especially suitable for use in textile printing. The printing plates are prepared by photographing subject matter with Kodachrome or similar film, and using the transparent colored positive developed therefrom with separate color filters to expose each color on printing plates coated with a light sensitive acid resist. Such a light sensitive acid resist consists of a mixture of a thinned light-sensitive asphalt and resin. Acid resist of a relatively thin character is applied to a transfer member over its entire surface by a textured printing element, giving a grained or lined effect. The plate corresponding to a certain color is covered with a heavier resist material and applied to the transfer member, and the resist materials offset on the surface of the printing roll which is then etched. Invented by John J. Ormond, Boston, Mass. Assigned two-thirds to Joseph D. Ramsey, Boston, Mass. Application October 25, 1940. 4 claims.

If you'll list the qualities you expect a mat to have, and check that list against the performance of Burgess Chrome Mats, you'll find they measure up 100%.
250
A Laboratory Product
BURGESS
Chrome
MATS
BURGESS CELLULOSE COMPANY
Manufacturers and Distributors of Burgess Chrome and Tone-Tex Mats
FREEPORT ILLINOIS
Pacific Coast Representative
RALPH LEBER CO.,
426 Polson Bldg.,
SEATTLE, WASH.

THE MOST IMPORTANT RESEARCH WORK TO HAVE BEEN PUBLISHED FOR THE GRAPHIC ARTS IN MANY YEARS.

Reading
As a Visual Task

By

Matthew Luckiesh, D.Sc., and Frank Moss, E.E.

For printers, publishers, designers, typographers and layout men!

IF you haven't thought of it in that way before now, it is your prime responsibility to assist in the nation's eyesight conservation. How you can assist in this vitally important phase of your profession will become apparent to you after reading this book.

Type faces, length of line, leading between lines, paper, ink, printing method, and lighting are some of the factors involved in eyesight conservation.

The text of the book is such that the language of the research scientist and the technician so far as possible have been brought together through the use of printers' language.

The book consists of 428 pages, size 5½ in. by 8⅝ in. Bound in maroon cloth, gold stamping on backbone. Illustrated.

Price $5 per Copy

Please enclose cash with order because of limited handling margin

PRINTING EQUIPMENT ENGINEER
1276 West Third Street Cleveland, Ohio

Handbook for Pressmen

BY FRED W. HOCH

This is a practical technical discussion of all platen and cylinder press operations in the commercial pressroom. The language used by the author is *your* language—the text is written simply and pertains to the operations actually performed in the pressroom.

To give an idea about the contents of the book we quote some of the chapter titles:

- Methods of Line-up
- Presswork
- Makeready, Platen Presses
- Makeready, Cylinder Presses
- Overlays and Makeready
- Close Register
- Setting the Rollers
- Overcoming Offset
- Workups—Cause and Remedy
- Slurs—Cause and Remedy
- Repairing Plate Batters
- Ink
- Color Mixing and Matching
- Metallic Inks

Some of the more unusual operations to many pressrooms are covered by the author in the following chapters:

- Printing Water Color Jobs
- Two Colors on One-Color Press
- Patent Base Speeds Imprint Jobs
- Printing on Cellophane
- Printing Facsimile Letters
- Details of Embossing
- Hot-Plate Embossing and Paneling
- Gum Label and Embossed Seal Printing
- Die-Cutting Methods
- The Stencil Screen Process

And much other valuable pressroom information. This book is bound in brown cloth, contains 236 pages, 6 in. by 9½ in., is well illustrated with line diagrams and a number of charts.

Price $3 per copy

Because of the small handling margin please enclose cash with order.

Printing Equipment *Engineer*
1276 West Third St.
Cleveland, Ohio

ECONOMY IN MAINTENANCE
CONSERVATION AND EFFICIENCY

go hand in hand through the use of our improved parts for typesetting machines . . . More than ever is it incumbent on owners to take advantage of their greater efficiency and the economy they represent in less frequent replacement.

Among the parts that have had a wide distribution over a period of years, are the following:

- Improved Assembler Slide Bar and Clamp
- Improved Assembler Slide Brake and Bracket
- Improved Back Mold Wiper
- Anti-Friction Roller Bearings and Rollers for First, Second and Justification Cams
- Improved Driving Shaft Clutch Rod
- Adjustable Star Wheel Friction
- Improved Assembler Chute Block, Rails and Spring
- Cook, Slow or Intermediate Speed Assembler Unit
- Improved Spaceband Buffer Finger
- Adjustable Assembling Elevator Gate
- Harrington Delivery Slide Bar and Clamp
- Everlasting Delivery Slide Long Finger Block
- Improved Knife Wiper
- Improved Vice Jaw Left Hand Adjusting Rod Locking Pin
- Automatic First Elevator Jaw Line Stop
- Knife Wiper Tension Spring
- Improved Front Mold Wiper
- Improved Ejector Blade Controller
- Knife Wiper Lever Bracket
- Emergency Keyboard Cams
- Foster Assembler Slide Bar and Clamp for Intertypes
- Star Self Actuating Feeder
- Model B Mold Cooler

Descriptive circulars available on all of the above.

ACE BELTS too, last far longer — and are stretchless

Precision TRADE ★ MARK Parts

LINOTYPE PARTS COMPANY

WEATHERLY, PA. (Factory and Main Office)
KANSAS CITY 314 West 10th St.

CHICAGO 318 W. Randolph St.
MINNEAPOLIS 503 Fourth Ave., South
DENVER 1441 Blake St.

Printing Inks and Related Chemicals:

2,319,876. NEW SYNTHETIC RESINS, prepared by reacting an aromatic sulphonamide, a compound containing at least two halogen atoms attached to different carbon atoms of an aliphatic grouping and a phenol, e.g. di-(4-hydroxy-phenyl)- dimethyl-methane, paratoluene sulphonamide and symmetrical glycerol dichlorhydrin. Solutions containing cellulose esters or ethers and the resins of the invention and also coloring materials may be employed as inks for printing plastic materials such as cellulose acetate film. Invented by William H. Moss, London, England. Assigned to Celanese Corp. of America, New York, N. Y. Application November 23, 1938. 10 claims.

2,320,225. NEW CONDENSATION PRODUCTS of amidines with alkylene oxides prepared by reacting amidines such as dicyandiamide, with alkylene acids such as ethylene oxide, at a temperature of substantially 106° C. in a sealed pressure bomb. Products of the invention are useful assistants in the lacquer industry and also in the formulation of printing inks, dye pastes, dye baths, etc. Invented by Walter P. Ericks, Coscob, Conn. Assigned to American Cyanamid Co., New York, N. Y. Application January 30, 1941. 2 claims.

2,320,510. PROCESS OF PRINTING WATER-SWELLING, NON-FIBROUS PELLICLES such as those formed of cellulose hydrate, cellulose acetate, etc. with a quick drying ink which is strongly adherent, non-offsetting and water resistant when the printed pellicle is immersed in water. The ink comprises a base of a heat-hardenable urea-formaldehyde resin, a plasticiser such as an alkyd resin, a hardening agent such as ammonium thiocyanate, a pigment and a suitable volatile solvent such as a mixture of toluene, butyl alcohol and ethylene glycol mono-ethyl ether. After printing, the pellicle is heated for a few minutes to dry the ink thoroughly. Invented by Ralph T. K. Cornwell and Charles M. Rosser, Fredericksburg, and John A. Yourtee, Falmouth, Va. Assigned to Sylvania Industrial Corp., Fredericksburg, Va. Application January 7, 1939. 10 claims.

2,320,707. AQUEOUS BATH for wet treatment of organic fibrous materials to change the surface active properties thereof. Wetting agent comprises an added solubilizing compound of the sulfur-containing type, such as sulfonated castor oil, and an amino-dioxane such as 5-amino-5-ethyl-2(3-heptyl)-1,3-dioxane. Products of the inventicn are especially suited for use in the preparation of printing pastes and sizing mixtures. Invented by Hillary Robinette, Terre Haute, Ind. Assigned to Commercial Solvents Corp., Terre Haute, Ind. Application November 15, 1941. 7 claims.

2,320,717. BASE MATERIAL FOR COATING COMPOSITIONS, comprising a terpene resin having a melting point of 80—150 deg. C., (ball and ring). An example of the use of the resin in the printing art is a solution of betapinene resin having a melting point of 125°C. in light petroleum naphtha and pigmented by suitable lakes, toners and other pigments. This resin solution is used in the manufacture of intaglio printing sheets on high speed presses. The resin is also useful in making printing inks which are alkali and acid resistant, such as are used in soap labels. Invented by Frank W. Corkery, Crafton, and Samuel C. Burroughs, Pittsburgh, Pa. Assigned to Pennsylvania Industrial Chemical Corp., Clairton, Pa. Application April 13, 1940. 2 claims.

2,321,316. SOLVENT TYPE PRINTING INK which may be used in the same manner and on the same type of press as oil base inks. The vehicle of the ink is a lacquer, the solute of which is a cellulose ether soluble in organic solvents such as ethyl cellulose. The solvent is a mixture of a certain type of high boiling ether alcohol, e.g. phenoxy ethanol, and a high boiling hydrocarbon component such as diethyl naphthalene. The ink is designed for use in high speed printing processes wherein the printed matter is dried by brief exposure to elevated temperatures. It can be printed on both fibrous surfaces such as paper and on non-fibrous surfaces such as thermoplastic cellulose derivative sheets. Invented by Norman R. Peterson and Joseph L. Sherk, Midland, Mich. Assigned to The Dow Chemical Co., Midland, Mich. Application May 17, 1941. 6 claims.

2,321,501. PRINTING VISCOSE PROCESS RAYON with acid and direct colors, whereby improved strength and fastness to soaping of the prints is obtained by incorporating into the printing pastes certain assistants such as alkali metal salts of aliphatic sulfuric and sulfonic acids having 3-12 carbon atoms, benzyl thioglycollic acid, etc. Example of a printing paste: Parts are by weight. Direct color dyestuff—C.I. No. 814—3.0, Sodium para toluene sulfonate (assistant)—10.0, water—17.0, textile gum—70.0. Invented by Charles F. Miller, Wilmington, Del. Assigned to E. I. du Pont de Nemours & Co., Wilmington, Del. Application October 25, 1940. 6 claims.

2,322,322. PRINTING PASTE used in discharge printing of fabrics dyed in dark shades, of the type containing vat dyes, wherein salts of an acid of phosphorous, e.g. tertiary sodium orthophosphate, having a basic reaction are incorporated, to solubilize the dyes instead of the alkaline compounds heretofore used. The illuminated discharge patterns obtained by using these pastes are clear, bright and sharp but unmottled and the objectionable halo about the edges of the discharge pattern is no longer obtained. Invented by George W. Seymour and George C. Ward, Cumberland, Md. Assigned to Celanese Corp. of America, New York, N. Y. Application March 29, 1941. 6 claims.

2,322,323. PRINTING PASTE used in the discharge printing of fabrics dyed in dark shades, such as described in patent 2,322,322, reported above. In the present invention certain salts of weak acids of boron silicon and sulphur having a basic reaction in aqueous solution, are used to solubilize the vat dyes. Examples of the salts are sodium silicate, sodium sulfide, sodium borate, etc. Invented by George W. Seymour and George C. Ward, Cumberland, Md. Assigned to Celanese Corp. of America, New York, N. Y. Application April 16, 1941. 7 claims.

2,322,445. HOT MELT INK AND PRINTING PROCESS especially applicable to large volume high speed printing by gravure or offset. An ink of candelilla wax and gilsonite, i.e. 10 parts carbon black, 45 parts gilsonite and 45 parts candelilla wax softens at about 64 deg. C. and has an ideal printing consistency at 75 deg. C. The press applying the ink is equipped with suitable heating means and it may also be desirable to heat the paper before printing in order to cause the ink to flow to a smoother surface before solidifying. In high speed, perfection, or multicolor printing it is desirable to chill the print after each impression by means of a watercooled roller or the like to thoroughly set the ink. By variations of temperature of the printing operation gloss and sharpness of the print can be controlled. Invented by Walter Huber, Mount Kisco, N. Y. Assigned to J. M. Huber, Inc., New York, N. Y. Application April 24, 1941. 6 claims.

Printing Presses and Equipment:

2,319,853. METHOD OF RAPIDLY DRYING PRINTED SURFACES in fast rotary presses, especially useful in multicolor printing using quick drying inks. This is accomplished by subjecting the freshly printed surface of the web to an atmospheric pressure which is below the vapor pressure of the highly volatile solvent in the ink, by leadmg the web into a low-pressure chamber. The solvent in the ink thereby flashes into vapor without the need of heat, air blasts or the like. Invented by Hobart N. Durham, Manhasset, N. Y. Assigned to The Goss Printing Press Co., Chicago, Ill. Application May 10, 1939. 10 claims.

2,319,961. PROOF PRESS of the type disclosed in Vandercook patent 1,843,255, having an improved safety mechanism which instantly stops the means propelling the impression cylinder carriage and the inking assembly across the press bed. Thus the mechanism prevents injury to an operator in case his hands are not quickly enough withdrawn from in front of the impression cylinder carriage or the inking assembly. Invented by Edward O. Vandercook, Kenilworth, and David D. Vandercook, Evanston, Ill. Assigned to Vandercook & Sons, Chicago, Ill. Application April 13, 1942. 5 claims.

2,320,100. PLATEN PRINTING PRESS of the type provided with pneumatic suction devices for feeding sheets to and delivering them from the platen of the press. A suction control device is provided whereby the feeding and delivery of sheets may be automatically stopped upon failure of the sheet feeding means to properly feed a sheet or of the delivery means to deliver a sheet, without, however, causing any sheet in process of feeding or delivery to be dropped into the press mechanism. Device may be rendered inoperative when desired, as when starting printing or when printing curly or other difficult sheets. Invented by William C. Rupp, Parma, Ohio. Assigned to The Chandler & Price Co., Cleveland Ohio. Application September 3, 1941. 17 claims.

2,320,239. PLATE CLAMP for locating a lithographic printing plate on a printing cylinder and quickly securing it. Or a series of multicolor printing plates, each on a number of printing cylinders, with the printing forms carried by each of the plates in corresponding position on each cylinder, may be quickly secured in accurate position and under tenzion. There is no necessity for adjusting the plate after it is placed on the cylinder and the clamping operation is said to be possible in a much shorter time than usually required. Invented by William F. Huck, Richmond Hill, N. Y. Assigned to R. Hoe & Co., Inc., New York, N. Y. Application August 3, 1940. 10 claims.

2,320,269. TEXTILE PRINTING MACHINE in which fabric printing may be carried out continuously without employing any paper or other material as a backing medium. Invention provides a metal printing cylinder having a high polish over which the fabric is passed to be printed upon. This cylinder receives the printed impression that passes through the openings or mesh of the fabric. After the fabric leaves the cylinder the latter is scraped, its inked section is subjected to a solvent bath and then cleaned before it is again engaged by the fabric at the printing point. Invented by George W. Darenberg and Donald Shea, Freeport, N. Y. Assigned to Phoenix Novelty Textile Printers, New York, N. Y. Application May 13, 1941. 2 claims.

(Because of editorial space limitations this month, balance of *Printing Presses and Equipment* will appear in the August issue.)

TRADE CONVENTIONS

International Trade Composition Association—Complying with ODT regulations respecting the holding of conventions, the International Trade Composition Association will hold a two-day meeting in Cleveland on Tuesday and Wednesday, September 21 and 22. The decks will be cleared for strictly business and technical discussions. No entertainment for the ladies has been provided.

American Photo-Engravers Association—The 47th annual convention of the American Photo-Engravers Association will be held this year by mail. It is planned to arrange an inspirational and informative program providing for a symposium of prepared papers on important subjects. This material will be published in the November issue of the *Photo-engravers Bulletin.*

ANPA Mechanical Conference—As has already been announced, the 1943 Mechanical Conference is being conducted by mail. The Mechanical Committee plans to issue a series of six bulletins at intervals, each of which will deal with mechanical and production problems. The June issue of *Printing Equipment Engineer* was devoted to the manufacturer and supplier exhibits in lieu of the "live" equipment and supplies exhibits usually held at the annual conference. Walter E. Wines, ANPA Dept. Mgr., 370 Lexington Ave., New York, N. Y.

International Association of Printing House Craftsmen—The 1943 War Effort convention of the International Association of Printing House Craftsmen will be held at Hotel Peabody, Memphis, Tenn., on Tuesday, Wednesday and Thursday, August 10, 11 and 12. Ray F. Brown, c/o Hotel Peabody Print Shop, Chisca Hotel, Main and Linden, Memphis, Tenn., is general convention chairman.

Northwest Mechanical Conference—The 1943 Northwest Newspaper Mechanical Conference will be held in abbreviated form at Hotel Raddison, Minneapolis, Minn., on Saturday afternoon, August 21 and Sunday, August 22. It has been announced by Secretary Vernon G. Eck that this conference will be devoted strictly to wartime conservation as it applies to newspaper production. WPB's Leon A. Link of the Printing and Publishing Division, is scheduled to address the meeting. Secretary V. G. Eck's address is 3725 48th Ave., So., Minneapolis, Minn.

For patent Research in the U. S. Patent Office, or a prompt estimate on any type of search, address INVENTION, INC., Munsey Bldg., Washington, D. C.

LET US KEEP
your type metal's history
IN THIS DRAWER

● Another worthwhile advantage of the Imperial Plus Plan is the fact that the Plus Plan user knows that we have a complete history of his type metal in our files. This means that he can ascertain amounts of metal purchased, prices and analysis when he needs this information. Another reason why it pays to Imperialize your plant!

Conserve your newsprint voluntarily, and thus prevent further mandatory W.P.B. control.

Imperial

IMPERIAL TYPE METAL CO.

Serving The Graphic Arts Industry Only

PHILADELPHIA NEW YORK CHICAGO

ZINK CUT CEMENT PRICES in the United States: 75c per large tube; $6.00 per dozen tubes; $5.00 per dozen tubes in gross lots.

Booth's Zink Cut Cement

Fits right into the conservation program of any production or mechanical executive. Executives who are participating in the ANPA Mechanical Conference By Mail no doubt will notice that their fellows, too, are conservation-conscious. Many of them are using this Cement and as a result are saving production time in several ways (1) It's a fast cut-mounting method, (2) It's the most economical, (3) It prevents the Old Man from asking embarrassing questions about lost or misplaced cuts, (4) It does not deform the printing face of any cut, (5) Fastens any kind of cut to wood or metal base.

Booth's Black Rubber Rolls

For line-composing machines save *much* unseen production time. They keep the superintendent, the operator and the machinist "sweet" because they contribute so much to successful machine composition. Price per dozen is $7.75; trial pair, $1.45. Let's get acquainted.

Please place on your purchase orders for Booth products the CMP Reg. 5 certification with the symbol AA-2; MRO, which has been granted to the printing and publishing industry for the purchase of maintenance, repair and operating supplies.

THE E. A. BOOTH RUBBER COMPANY

364 ROCKEFELLER BUILDING • CLEVELAND, OHIO

TINGUE
PRINTING PRESS
BLANKETS
TINGUE, BROWN & CO.
114-120 East 23rd St. NEW YORK, N. Y.
1227 Wabash Ave. CHICAGO, ILL.
723 E. Washington Blvd. LOS ANGELES, CAL.

How to Adjust
WORK-UPS
By Wm. H. Lichter and Geo. F. Smalley
This 24-page booklet analyzes causes of work-ups and gives proper procedure for locking up forms.
PRICE $1.00 CASH WITH ORDER
PRINTING EQUIPMENT *Engineer*
1276 West Third Street Cleveland, Ohio

Warns *newspaper publishing industry that newsprint consumption must be balanced with production* or *another curtailment order*

IN ANPA Newsprint Bulletin No. 24, John L. Blake, General Manager of the Scripps-Howard Supply Company, New York, discussed the newsprint situation and warned that consumption must be balanced with production *or* another WPB curtailment order. His opinion is that it is necessary for the newspaper printing industry to use not more than 85% of 1941 newsprint consumption in the eight months remaining in 1943. (The statement appeared in May.)

Mr. Blake referred to the statement made by WPB Chief Nelson before the sub-committee of the House Committee on Interstate and Foreign Commerce. The statement meant that there would be a deficiency of 66,796 tons between newsprint supply available for the U. S. Market and use in 1943. Apparently, it was Chairman Nelson's opinion that "this deficiency is not large enough to cause serious concern."

Mr. Blake then writes:

"Mr. Nelson's deficiency is predicated on the biggest IF in the newsprint situation in 20 years. That IF is that 1943 requirements be 10% under 1941. As of May 1, the average reduction for 1943 was 5.1% under 1941. The reduction in April 1943 was also 5.1% under April 1941, so the rate of reduction isn't increasing.

"If the reduction isn't immediately and drastically increased, the deficiency will be 259,355 tons in 1943. This deficiency can come only from one place and that is the publishers' reserve. It would represent a 32 days' supply so that these stocks would be reduced to 20 days —a condition probably without parallel in the history of modern newspaper publishing.

"And, the reduction necessary for the remainder of 1943 to balance production and use must be greater than the 10% goal set by WPB at the beginning of the year. The 4.9% difference between the 5.1% achieved and the 10% sought in the first four months must be made up in the remaining eight months.

"One thing every publisher must be mindful of is that maximum production for the United States market is frozen at 3,470,000 tons in 1943. Many things can interfere with this much paper being made.

"Here are some obstacles that have already interfered so far this year: (1) Unprecedented snow storms completely closed mills in Canada and Newfoundland. (2) These same snow storms caused an acute shortage of railroad cars that forces suspension of other mills. (3) Unprecedented gales caused complete loss of water-borne pulpwood for 35,000 tons of newsprint and forced mill suspension for a week. (4) Late spring thaw caused

Foreman Status Recognized

ALL mechanical executives in the printing industry will applaud the remarks of President C. Donald Dallas of Revere Copper & Brass Co., who also is chairman of Industrial Relations Policy Committee of the National Association of Manufacturers. The statements were included in a release issued by NAM in connection with publication of a 16 page booklet entitled *The Foreman—The Key Man in Your Plant.* The booklet is a check sheet of recommended procedures in the supervisory field which management is urged to follow in building up sound management-supervisory relations.

Mr. Dallas's remarks are as follows:

"The supervisor today must exercise leadership under pressure. In carrying out their jobs, foremen require authority consistent with their responsibilities.

"As an example, the foreman should have the right to approve applicants for employment whose work he must supervise; he should have the right to advocate discharge of employees; and he should be held responsible for the maintenance of satisfactory employment relations in the group he supervises.

"The foreman should normally be the first contact for workers who have grievances they wish to discuss."

Mr. Dallas said that a canvass of plants where good management-supervisory relations were enjoyed showed that seniority rules and practices should not govern the selection for supervisory positions.

"The foreman should be excluded, in his position as foreman, from any seniority rules or practices affecting the general working force," he added.

It was recommended that foremen should be informed promptly by executive management of all important discussions with employee groups and representatives, and that executive management should seek "the observations and suggestions of the foremen upon production, personnel and operating problems."

Mr. Dallas said that all the foregoing principles were applicable to women as well as to men in supervisory positions.

The NAM committee recommended that foremen be offered the opportunity of acquiring a complete understanding of management's viewpoint so that in turn they may exercise leadership in their duties as supervisor of production and management's employment relations representatives.

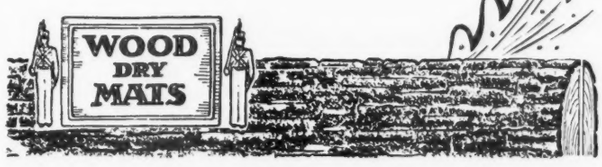
RIGHT FROM THE WOOD

Today the supply of wood pulp is a vitally important subject in the minds of newspaper men.

In the manufacture of Wood Dry Mats, quality pulp has always been a "must". This quality definitely manifests itself in the results obtained from Wood Mats.

WOOD FLONG CORPORATION
HOOSICK FALLS, NEW YORK
New York City Office: 551 Fifth Avenue

Watch your newsprint. Your cooperation today will prevent an additional cut tomorrow!



KIMBLE
CUSTOM-BUILT MOTORS

FINE CUSTOM-BUILT MOTORS FOR THE GRAPHIC ARTS INDUSTRY SINCE 1904

KIMBLE ELECTRIC
Division of Miehle Printing Press & Mfg. Co.
2005 WEST HASTINGS STREET
CHICAGO, ILLINOIS
DISTRIBUTED BY: AMERICAN TYPE FOUNDERS

suspension of many mills because lack of water to generate power. (5) Burned out generators at large power plant forced suspension of several largest producers. (6) Storms washed out dam of mill and took its supply of wood with it, forcing closing down. (7) A strike closed three mills for several weeks. (8) Unexpected demands from overseas. (9) A washout on a railroad isolated at least three large mills from shipping facilities.

"That newsprint manufacturing facilities are strained to keep up the pace is demonstrated by the fact that the shortage of wood and labor on the Pacific Coast has backed up towards the east as far as the Kapuskasing, Ontario mill of Spruce Falls Power & Paper Company. Most of this Company's output has been sold in New York, Philadelphia and Washington. But now, to take care of an acute shortage, the Canadian Newsprint Administrator has put this mill on a bloc of tonnage normally produced by Pacific Coast Mills. These orders have moved progressively eastward across Canada.

"Do not be misled by highlight statistics. For instance, you are likely to be assured by publishers still having a supply of 52 days on hand, which is down only 11 days from the 63 days on hand on January 31. Analyzed though, you will find that publishers' stocks have been reduced by 110,274 tons since November 1, 1942. It is patent that this cannot continue.

"Don't be fooled by WPB allotments either—you can't print newspapers on allotments anymore than you can run an automobile on gas ration coupons.

"Publishers are obviously faced with two choices—either to adjust their use to supply voluntarily or else have the Government issue another curtailment order.

"You can never buy better assurance of continuity of operation than by helping the Publishing industry to immediately get down to using 85% of 1941 consumption of newsprint for the remainder of 1943."

"FLECTO"
GUMMED BACKING FELT

Porosity permits quick escape of steam — glue coat prevents slipping or leaving matrix under heat. Adhesive does not crack, peel, or crystallize. Gauges .021, .025, .030, and .035 in sheets 18" x 24" also gauges .040, .045, .050, and .060 in sheets 18" x 22" — no charge for strip cutting.

COATED ZINC BACKUP BOARD

GAUGES: .015—.032

READY FOR IMMEDIATE USE

Samples on Request

EASTERN NEWSPAPER SUPPLY
9603 NORTHERN BLVD. ★ ★ CORONA, NEW YORK

YOU CAN GET A C&G SAW TRIMMER QUICKER if You Order NOW!

Insure that you get a NEW C&G Saw Trimmer from the first machines available by placing your order NOW.

The C&G No. 3-A Saw Trimmer has many exclusive features that contribute to simple, easy, and profitable operation.

There is a circular available showing these features. A copy will be sent without obligation to you.

MILWAUKEE SAW TRIMMER CORP.
610 EAST CLYBOURN STREET, MILWAUKEE, WISCONSIN

Kreber Passes On

Frank Kreber, president of the Van Bolt-Kreber Co., Electrotypers, Columbus, Ohio, passed away suddenly early in July. He is survived by Mrs. Kreber and two sons—Leo, who is a brigadier general now located somewhere in the Pacific area, and Raymond, whom it is expected will carry on the business. Mr. Kreber was the best known national figure in the electrotyping industry. He was president of Printing Plates Research, Inc., which has already sponsored effective research work for the industry. He was a past president of the National Electrotypers' Association. He was gifted a fresh, open mind that endeared him to those who knew him.

A Question of Compliance

CERTIFIED is well aware of the old adage, "Out of sight, out of mind." We are conscious of a handicap in trying to maintain the interest and good will of craftsmen with rare visits, or none at all, when other supply men seem to have no difficulty in getting around.

Yet there are times when absence should be more eloquent than presence. Such a time is the present with travel facilities dedicated to the task of winning the war. Probably it has never occurred to a printing craftsman to say to any visiting supply man, "How did you get here?" If he were to do so and the supply man were to give him a slick story of black market rationing cards or of back door access to fuel sources, the craftsman might grin and regard his visitor as a very clever chap—or he might get good and mad.

We do not wish to put friends of Certified to this choice. If they told us to get the hell out and stay away for the duration, our sober second thought would applaud their mandate. So we are sticking to our announcement of May 1942, voluntarily restricting the travel of our representatives to such visits of necessity as their legitimate A cards make possible, supplemented by off-peak train and bus trips. This policy does not affect Certified service because when the Certified service man is needed, he is on the job pronto and will travel by train, bus or 'plane, whichever method may be available and depending upon the urgency of the service call.

Much is said about the economic unsoundness of rationing and price control. No one claims that they are valid policies for ordinary times or that their complete observance is probable. They might be wholly unenforceable and still impose an obligation on every honest, patriotic American. Yet too many make "unsoundness" or non-observance by others an excuse for their own evasion of regulations. Because they don't "believe" in policy, they feel actually virtuous in their violations.

Certified wants the government to succeed in its present heavy task and neither our business interests nor any economic quibble will prompt us to put one obstructive stone in the path to victory.

Editorial from Certified News, published by Certified Dry Mat Corporation, 9 Rockefeller Plaza, New York 20, N. Y.

EMPLOYMENT
AND SERVICE

Employers, production and mechanical executives may insert notices in this department. Items may pertain to the following subjects: "Executive Wanted," "Association or Partnership Wanted," or "Position Wanted," readers referring to subjects of a personal nature such as obtaining information about addresses of executives, supplying copies of technical articles and magazines, patents for sale or requests for contacts for developing and/or financing of inventions.

Any reasonable reader request will be granted.

Notices may be printed under the following regulations: First insertion (maximum six lines) is free of charge. All subsequent insertions of the same item subject to a charge of 75c per line in advance.

Address all communications with box number to *Printing Equipment Engineer*, 1276 West Third St., Cleveland, O.

WANTED—Position as manager of printing plant. Thirty years experience as executive and manager has given me what is needed to make a plant profitable. Minimum salary, $7,500 yearly. Reply Box 106, *Printing Equipment Engineer.*

CUSHMAN
OFFSET
MOTOR
for
LINOTYPES INTERTYPES
LINOGRAPHS

Originally designed in 1893 especially for use on Typesetting machines. Progressively improved to make it the outstanding motor for this purpose.

Over a period of years, more than 12,000 Cushman Motors have been installed on machines. This is a definite recognition of satisfaction.

CUSHMAN ELECTRIC CO.
69 SO. MAIN ST. CONCORD, N. H.

Challenge 1893 50TH ANNIVERSARY 1943

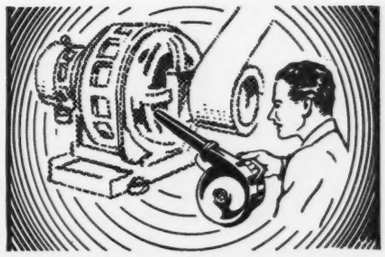
FIFTY YEARS OF QUALITY!

"CHALLENGE" has been the printers "buy-word" for fifty years. The manufacturing of quality Printing Machinery and Equipment has become our *habit* . . . you can choose CHALLENGE with confidence. Write for data—NOW!

THE CHALLENGE MACHINERY CO.

Main Office and Factory: GRAND HAVEN, MICH. ★ Eastern Sales Office: 50 Church St., NEW YORK

QUICKER CLEANUPS at Lower Cost with the TORNADO BLOWER-CLEANER



IN your all-out defense against dust danger and damage, use the TORNADO. Gets dust, dirt and lint *all out* of motors, linotypes, presses, folders. Makes motors and machines last longer. Also convertible for vacuum-cleaning of shelving, paper stock and type cases. Adaptable for spraying paint and insecticide. Keep your costs down — your profits up — by keeping your plant clean with a TORNADO.

Write for details and Free Trial Offer!

TAKE THE DUST OUT OF DUST IN with BREUER'S BALL BEARING TORNADO PORTABLE ELECTRIC BLOWER

BREUER ELECTRIC MFG. CO.
5114 N. Ravenswood Ave., Chicago

WANTED TO BUY—One copy each ANPA Mechanical Bulletins, Nos. 1 through 34 inclusive. Will buy one copy any of above numbers even though file is incomplete. For instance, if you have Nos. 11, 12 and 13, and wish to dispose of them, get in touch with Box 105, *Printing Equipment Engineer*.

TECHNICAL LITERATURE

Production and Mechanical Executives wishing to secure copies of the literature described below may do so by addressing the manufacturer direct, or by sending request to Printing Equipment Engineer.

Aiding Production with Clean, Dry Air

That is the title of an 8-page bulletin, No. 543, just released by the Logan Engineering Co., which points out the unnecessarily high maintenance and replacement costs and loss in man-hours resulting from moisture and dirt in compressed air lines. How the Aridifier cleans and dries compressed air by centrifugal force is graphically shown. How units are placed in the line is shown and complete specifications are given for sizes from ¾ in. to 10 in. Copy of Bulletin No. 543 will be forwarded on request.

Issues L-226 Instruction Sheet

Accompanying a letter to the trade, Wm. A. Force & Company has made an explanation of the effect of WPB Limitation Order L-226 upon the purchase of numbering machines. The explanation shows how numbering machines and accessories may be purchased to conform with L-226. Also accompanying the letter is a 12-page folder, illustrating and describing the Force line of numbering machines.

Ties in with GAVC

The new PAC booklet, War Printing—A Survey, published by the General Printing Ink Corporation consists of 16 pages, is printed in red and black ink and is copiously illustrated with miniature reproductions of commercial printing pertinent to aiding prosecution of the war. This booklet ties in beautifully with the Graphic Arts Victory Committee program which is in process of organization throughout the country. Publishers of the booklet state that it is a summary of American ingenuity in the use of printing to aid the war effort and to preserve individuality of business enterprise. A large number of American business executives cooperated in this survey on war printing. Each of the miniature reproductions of printing is accompanied by an explanatory note telling for what purpose the particular printing was issued. The layouts showing the various printing applications have been divided as follows: Strategy, Conservation, All-out War Effort, Labor Morale, Public and Consumer Relations, "For Auld Lang Syne", and Markets of Tomorrow. Copies of the booklet may be obtained by writing Herbert Kaufman, PAC Director, General Printing Ink Corporation, 100 Sixth Ave., New York, N. Y.

The Story of the Current Wood Pulp Situation

ON June 26, OWI released a statement with respect to the consumption of wood pulp by United States paper and paper-board mills. This consumption continues to exceed current new supplies, it was announced by the Pulp and Paper Division of WPB.

With wood receipts averaging 26% less than in 1942, and inventories of pulp decreasing at the rate of 34,000 T. per month, the paper and paperboard industry is now faced with a critical situation, it was explained. There is no present prospect of being able to obtain a supply of wood pulp sufficient to meet current consuming demands.

These conditions created very difficult problems for the Wood Pulp Allocation Industry Advisory Committee at its June 21-23 meeting. It was found necessary to recommend allocations bringing about a further reduction of pulp inventories to an estimated industry-average of less than 30 days, as of July 31.

Demand in some grades, notably bleached sulphite and unbleached sulphate, continues to exceed supply so greatly that allocations of these grades of pulp had to be supplemented by authorized shipments of other substitute grades to mills so as to provide even an estimated three weeks' inventory as of July 31st.

Substantial tonnages of both Northern and Southern unbleached kraft pulp which had been withheld by integrated mills were again diverted by WPB to non-integrated consumers manufacturing highly essential papers and paperboards. For the most part, all other grades of tonnage withheld from shipment under WPB Supplementary Order M-93-a were allocated back to the producing mills.

The consumption of pulp during the first five months of 1943 has averaged 862,000 T. a month against a new supply averaging only 828,000 T. a month. Inadequate wood supply has already resulted in serious curtailment of pulp production, with another bleached sulphite mill planning to shut down about the first of July. A substantial number of paper mills has been forced to go to short-time operations, while some have already closed down.

To meet this situation strenuous efforts to increase pulpwood production are being made, and the War Production Board is taking steps to assure the continued production of adequate quantities of papers and paperboards needed for essential war and civilian requirements.

The decline in inventory of wood pulps of various grades at United States pulp and paper mills between January 1, 1943 and May 31, 1943, in percentages, and the estimated number of days' inventory of market wood pulp of each grade which will be in the hands of United States paper and paperboard mills on July 31, 1943.

Under existing conditions, it is necessary for all consumers to restrict their use of wood pulp, particularly of the scarcer grades, to the manufacture of essential items of paper and paperboard. The increased use of waste papers and other secondary fibre is necessary as is the sub-

The following table shows:

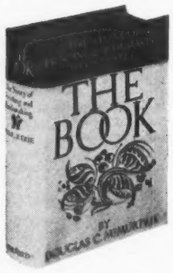
Grade of Wood Pulp	Per Cent decline* in Wood Pulp Inventories at U. S. Pulp and Paper Mills Jan. 1, '43 to May 31, '43.	Estimated July 31st Inventory of Wood Pulp at U. S. Pulp & Paper Mills.
Total Paper Pulp (all grades) (Decline)	23.5%	15-20 days, plus the equivalent of 5-days consumption in unbleached sulphite and soda.
Bleached Sulphite (Decline)	16.8%	
Strong and Newsgrade Unbleached Sulphite (Decline)	24.1%	20-25 days, including some allocations of newsgrade as a substitute for strong unbleached.
Northern Bleached Sulphate (Decline)	44.3%	15-20 days.
Southern Bleached Sulphate (Decline)	2.7%	20-25 days.
Northern and Southern Unbleached Sulphate (Decline)	55.4%	20 days.
Soda Pulp (Decline)	16.2%	20-25 days.
Groundwood (Increase)	23.5%	30 days.

*Except in Groundwood.

Announcing

THE 7TH REVISED EDITION

THE BOOK



The Story of Printing and Bookmaking

by

Douglas C. McMurtrie

Here is the whole fascinating history of printing told by one of America's outstanding typographers and book designers. Long regarded as the standard work on the background of printing, *The Book* belongs on the reference shelf of every printer. The text is illustrated by 150 reproductions of the work of old and modern printers, engravers and bookbinders. A 32-page bibliography of the most significant titles on printing and bookmaking is included.

Bound in blue buckram, gold stamped, 676 pages, 7 in. by 9¾ in.

Price $5 per Copy

Because of the limited handling margin, please send cash with order

PRINTING EQUIPMENT ENGINEER

1276 West Third Street **Cleveland, Ohio**

MANUAL *of* STEREOTYPING

by JOSEPH D. GOGGIN

In this book, the author discusses the three primary factors in stereotyping — equipment, materials and manipulation. Since the stereotyping process largely is an Art and the results to be obtained in good plate-making are dependent upon the coordination of equipment, materials and manipulation, a reliable guide for securing this coordination is essential.

In preparing this book, the author has drawn upon his extensive practical experience and study in the Art. The all-important preparation of the form from which the mold is to be made and the molding and casting procedures are thoroughly discussed from the standpoint of the peculiar requirements of the process.

A Glossary and Encyclopedia gives definitions of terms used in the stereotype process. Bound in black cloth, gold stamped, 256 pages, size 5½ in. by 8 in. Price, $5, cash with order. Handling margin makes it necessary that cash accompany all orders for books.

PRINTING EQUIPMENT Engineer

1276 WEST THIRD STREET, CLEVELAND, OHIO

stitution of unbleached sulphite, soda pulp and hardwood sulphite in place of softwood bleached sulphite, and news-grade sulphite in place of strong unbleached. Groundwood should be utilized as a substitute for other grades of wood pulp, wherever possible.

It is clearly evident that in view of the inadequate wood supply and with pulp inventories already reduced below a practical minimum basis, every possible effort must be made to increase wood and pulp production to obtain the maximum utilization of all secondary fibres, and to produce the maximum area of paper and paperboard with minimum consumption of wood pulp and other fibre, the Pulp and Paper Division concluded.

Important Publication

The United States Department of Labor has published a booklet entitled *A Guide to the Prevention of Weight-Lifting Injuries* (Special Bulletin No. 11). The title of the booklet is entirely descriptive of its content. This booklet should be in the hands of every printing plant executive, or at least one copy should be available for plant use by executives and safety committees. It can be obtained from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at 10c per copy. Sprains, strains and hernias among plant personnel can be avoided.

New Army-Navy Award for Hoe

The second citation of R. Hoe & Co., Inc. for meritorious service on the production front was announced last week when the company was authorized by the War Department to add the white star to the company's present Army-Navy Production Award Flag. In acknowledging the new Award, R. Hoe & Co., Inc. recognized the cooperation of publishers and printers who, by maintaining their existing Hoe equipment so as to insure continuous production, have minimized the need for parts and service and thus contributed materially to the armament output which earned the second commendation.

Why Not Try the *New Way!*

Mount Cuts on Bases with the new

A.P.S. Double Gummed Paper Tape

2" wide, 150' rolls	.50 each
2" wide, 500' rolls	1.25 each
2" wide, 600' rolls	1.50 each
4" wide, 150' rolls	1.00 each
4" wide, 500' rolls	2.50 each

Sample on request

AMERICAN PUBLISHERS SUPPLY

P. O. BOX 924 LYNN, MASS.

DUPLEX PRESSES

Semi-Cylindrical • Unitubular
Tubular • High Speed Flat Bed
Flat Bed • Stereo Machinery

The Duplex Printing Press Co.

Battle Creek, Mich.

SAVE YOUR MANPOWER
BUY NEW "BULLDOG" CLAMPS
Save Their Hands

New Model
J. A. Richards
The Saw-Maker
Kalamazoo
13F
Mich.

ANTI-
FANNING

Stop Offset Trouble!

Send today for our new bulletin, "10 Ways to Avoid Offset." 14 pages of valuable hints for the pressman — how to improve presswork save money — by stopping Offset trouble.

E. J. KELLY CO.
1807 N. Pitcher St. Kalamazoo, Mich.

SAFETY · RELIABILITY · ECONOMY
CLINE
PRESS DRIVES
and
CONTROL
Reels, Tensions
and Pasters . . .
CLINE SYSTEM
CLINE ELEC. MFG. CO.
Chicago, 211 West Wacker Drive
New York, 220 East 42nd Street
San Francisco, 1st Nat'l Bank Bldg

$325 GET THE FACTS!
ON THE
NEW Rouse BAND SAW
H. B. ROUSE & COMPANY
2216 N. WAYNE AVE., CHICAGO, ILL.

100% AUTOMATIC SLUG SAWING
Odd-measure slugs sawed to any measure as ejected from line-casting machine. Fast — accurate — economical. Write for folder and prices.
MOHR LINO-SAW CO.
128 N. Union St. Chicago
MOHR
SAW

PREPRINT
To PREPRINT means to check and to correct plate and form faults and errors when it can be done most economically and efficiently.
It will cut down your makeready time, increase the impression output of your presses, and add to your profits. Write for circular.
VANDERCOOK
PROOF PRESSES · BLOCK LEVELLERS · HACKER GAUGES
VANDERCOOK & SONS, 900 N. Kilpatrick Ave., Chicago 51, Ill.

Printing Equipment Engineer will endeavor to find out for you where it can be obtained.

WPB News and Notes

(Continued from Page 20)

pated after issuance of Newsprint Order L-240 early in the year have not materialized.

Recommendations that newspaper publishers be directed to reduce their use of newsprint by approximately an additional 5% during the third quarter, and their inventories to a 50-day supply, with certain regional exceptions, were made by the Newspaper Industry Advisory Committee meeting with WPB representatives on June 17, H. M. Bitner, Director of the Printing and Publishing Division announced on June 18.

Elrod
produces economically leads, slugs, rule, base of the highest quality.
Ludlow Typograph Co.
2032 Clybourn Avenue + Chicago, Ill.

The recommendation, proposed to be effective July 1, suggests that there be no further cut on the first 25 T. per quarter used by publishers of papers which consume not more than 500 tons of newsprint per quarter. The purpose of the 25 T. exemption was to accommodate the smaller papers and it applies only to them, since the representatives of larger papers present agreed to forego this exemption.

The industry's proposal actually embodies a sliding scale of cuts in percentages beyond those in effect January 1, in accordance with the following schedule:

Users of Tons Per Quarter	Percentage Cut
25 T.	0.00%
50	2.50
75	3.33
100	3.75
200	4.33
300	4.60
400	4.70
500	4.80
Above 500 T.	5.00

The Committee also recommended that the WPB Printing and Publishing Division establish inventory limitations of newsprint at a 50-day supply throughout the United States, except west of the Rocky Mountains and south of the northern border of North Carolina, retaining the 75-day maximum inventory in the South and West as Order M-241 now permits.

The Advisory Committee also recommended that the Printing and Publishing Division work out a plan to allocate deliveries of both Canadian and United States newsprint to United States publishers, and institute a new ruling covering the handling of appeals for additional newsprint, so that the competitors of an appellant would receive notice of the filing of the appeal and have an opportunity to comment.

Cellulose Acetate Under Allocation

CELLULOSE acetate was placed under allocation on June 8 by WPB by the issuance of Order M-326-a. The order applies to molding powder, sheets, rods and tubes. Cellulose acetate is used for masking by art departments, for printing from wet negatives in photo-engraving plants, and is also used for binding or preserving back issues of publications and important documents. For these particular purposes, delivery of 50 lbs. or less of cellulose acetate sheets, of any thickness, during any calendar month, may be accepted without restriction.

On purchase orders for more than 50 lbs. in any one month it must be stated

clearly and in detail the uses for which the material is being ordered. In addition, a certification must be included. It is as follows:

> Pursuant to Supplementary Order M-326-a, the undersigned hereby certifies to the seller and to the War Production Board that the cellulose plastics covered by the accompanying purchase order will be used solely for the purpose(s) listed above.

It is stipulated that the purchaser's inventory must not exceed a 60-day supply at any time.

WPB Forms Renumbered

THE War Production Board commenced on May 22 to standardize its form numbers into one "WPB" series only. All "PD" and "UF" forms and letters will be canceled and will be reissued in the "WPB" series, as will also some of the "CMP" forms and letters.

The prefix "WPBI" will be applied to the numbers for all nondata request forms and letters. The present "WPB", "ASU" and "WPBI" numbers, however, will not be changed.

Of principal interest to mechanical and other executives in printing, publishing and graphic arts plants are the two related to "PD-1A" and "PD-556", the latter being used in supplying necessary data under Order L-226 for permission to buy graphic arts machinery. The "PD-1A" form, which may be used for instance at this writing in making requests for the purchase of photo-engraving zinc and copper or for photographic film, for instance, has been changed to "WPB-541." The form, "PD-556", which as stated above, is to be used in securing permission to buy graphic arts machinery, has been renumbered "WPB-1319."

It has been announced by the War Production Board that as forms and letter numbers are changed to the "WPB" series, they will indicate the former series number, thus: Form "WPB-541," formerly "PD-1A." WPB also announces that it is expected that both the old and new number will be carried on the form for four months, to allow time to become familiar with the new numbers.

Order L-239 Further Restricts Uses of Paperboard Boxes

ON June 26, the War Production Board prohibited the manufacture of cartons used to carry soft drinks, and also by amending Order L-239, imposed restrictions on the use of solid and filled paperboard in the manufacture of boxes. Likewise, restrictions are imposed on the manufacture of cigarette package wrappers, cigarette cartons, certain wearing apparel accessories boxes and rubber heel boxes, and revises retail box quotas and general exceptions to the order to alleviate inventory problems.

Simultaneously, manufacture of any specialty paper bag, particularly designed to be used as a bottle carry-out bag, is prohibited under Order L-304 also issued concurrently.

The definition of a bottle carry-out bag under Order L-304 does not include paper shipping sacks and grocers' variety bags made in accordance with specifications of Order L-261 (Grocers' and Variety Bags).

As a result of the Order L-239 restrictions, it is estimated that approx. 15,000 T. of paperboard and 2000 T. of paper will be saved annually.

Beginning June 22, manufacture of any type folding or set-up paperboard box for packing bottled non-alcoholic beverages is prohibited. This includes boxes for conveying bottled beverages from bottlers to distributors, bottle "carry-ours" used by consumers to carry soft drinks and beer from the distributor. Solid fibre or corrugated shipping containers are excluded. Restrictions do not apply to medicinal preparations, or to boxes already made-up.

Manufacturers are permitted to make up the following boxes: (1) Boxes for use as outer containers in parcel post or express shipments; (2) Boxes for packing products containing 25% or more of metal by weight; (3) Boxes for packing any other products or material determined by WPB to require the protective strength or kraft board and kraft liners, because of its weight, design, fragility, or method of packing.

Cigarette Wrappers.—Printed wrappers for cup-type packages with 20-cigarette capacity, may use only 60 lb. uncoated or 65 lb. uncoated for standard cigarettes, and 65 lb. uncoated or 70 lb. coated for king size. Estimated approx. annual savings 2000 T. of paper.

Cigarette Cartons.—No manufacturer may make any cigarette carton of a capacity of 10 packages of 20 cigarettes each from paperboard thicker than 0.018 in. caliper. Estimated annual savings 500 T. of paper.

Merchandise Folders.—Use of virgin wood pulp liner permitted on outside of small merchandise folders. Specifications: One-piece style only with lock closures and without metal clasps; total area of blank must not be larger than 600 sq. in.; paperboard grade no better than clay-coated; caliper is as follows: Under 200 sq. in. overall area, 0.020 in.; 200 to 400 sq. in. inclusive, 0.022 in.; over 400 but not over 600 sq. in., 0.024 in.

Wearing Apparel Accessories Boxes.—For packing belts or suspenders, not less than 6 units; for garters, less than six pairs. Estimated savings, about 3000 T. of board annually.

Rubber Heel Boxes.—Not less than 6 pairs, stock not thicker than 0.024 in. caliper, or paperboard better in quality than bleached manila lined news. Estimated savings annually, 50% of paperboard used for making these products.

Retail Box Quotas.—The 65% paperboard quota is changed from quarterly to annual quota. Amount is not changed.

Advertisers' Index — July 1943

American Publishers Supply....30
American Type Founders.....6
Atlantic Zinc Works.....21
Booth, The E. A. Rubber Co....25
Breuer Electric Mfg. Co.....29
Burgess Cellulose Co.....22
Challenge Machinery Co., The..29
Cline Electric Mfg. Co.....31
Duplex Printing Press Co., The.30
Eastern Newspaper Supply.....27
Goodyear Tire & Rubber Co.... 3
Goss Printing Press Co., The....19
Harris-Seybold-Potter Co.....Inside Front Cover
Imperial Type Metal Co.....25
Intertype Corporation.Outside Back Cover
Kelly, E. J. Co.....31
Kimble Electric Co.....27
Lanston Monotype Machine Co.. 1
Linotype Parts Co.....23-28
Ludlow Typograph Co.....31
Mergenthaler Linotype Co.....17
Milwaukee Saw Trimmer Corp..28
Miller Printing Machinery Co... 4
Mohr Lino-Saw Co.....31
Richards, J. A. Co.....31
Rouse, H. B. & Co.....31
Tingue, Brown and Co.....26
U. S. Treasury Dept.....Inside Back Cover
Vandercook & Sons.....31
Wood Flong Corp.....27
Wood Newspaper Machinery Corp.....2

TO HIT 'EM H-A-R-D-E-R

THE year 1943 promises to be the grimmest, hardest year this country has ever faced. Every effort, and every dollar of national income not absolutely needed for existence, should go into war work and War Bonds.

In the Pay Roll Savings Plan, America finds a potent weapon for the winning of the war—and one of the soundest guarantees of the preservation of the American way of life!

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. *Great as this sum is, it is not enough!* For the more dollars made available now, the fewer the lives laid down on the bloody roads to Berlin and Tokio!

You've undoubtedly got a Pay Roll Savings Plan in your own plant. But how long is it since you last checked up on its progress? *If it now shows only about 10% of the gross payroll going into War Bonds, it needs jacking up!*

This is a *continuing* effort—and it needs *continual* attention and *continual* stimulation to get fullest results.

You can well afford to give this matter your close personal attention! The actual case histories of thousands of plants prove that the successful working out of a Pay Roll Savings Plan gives labor and management a common interest that almost inevitably results in better mutual understanding and better labor relations.

Minor misunderstandings and wage disputes become fewer. Production usually increases, and company spirit soars. And it goes without saying that workers with substantial savings are usually far more satisfied and more dependable.

And one thing more, these War Bonds are not only going to help win the war, they are also going to do much to close the dangerous inflationary gap, and help prevent post-war depression. The time and effort *you* now put in in selling War Bonds and teaching your workers to save, rather than to spend, will be richly repaid many times over—now and when the war is won.

You've done your bit ★ ★ ★ Now do your best!

This space is a contribution to victory today and sound business tomorrow by

PRINTING EQUIPMENT ENGINEER

A FREE PRESS is the Fuse that makes Ideas shake the earth

IDEAS are often explosive. They can upset and change arranged orders of things more effectively than dynamite.

• Some high-minded individuals have at times been concerned lest the common people handle some explosive ideas—in the fear that inexperienced minds might change things for worse, instead of for better.

• But here in America a constitutional free press makes sure that all of the people have full access to information, opinions and wide varieties of ideas. Under this system the United States of America has demonstrated for all time that no one need be concerned about the wisdom of government of, by and for the people.

• What could be more conclusive than the fact that this people has advanced in but a few generations to higher standards of welfare and has won more material conveniences than has any other nation in thousands of generations before.

• A tree is known by its fruits. These fruits are good, and they are getting better all the time. The educational power of a free press—books, newspapers, magazines, even advertising—has helped accomplish so much in the past that no expediency or temporary condition should ever be permitted to blind us to the fact that a free press is our greatest Freedom.

• Only on the proved foundation of a free press can America's democratic procedure continue to build soundly toward all the other Freedoms.

TEXT IN FUTURA BOOK

* INTERTYPE *

Thirteenth of a series on Freedom of the Press by Intertype, Brooklyn